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A Publication of the Park Practice Program

The Park Practice Program is a cooperative effort of the National Park Service and the National Recreation and Park Association

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Introduction

by William J. Whalen, Director
National Park Service

Bird watching is part of the fun along the Chesapeake and Ohio Canal (MD, DC, WV). NPS

Americans always have turned to rivers and trails for outdoor recreation and for release from the tensions of their busy lives.

Recently, however, people looking for such outdoor experiences have found too many of our streams have been dammed, polluted, or commercially developed. Secluded paths have become mere memories to many, as suburban sprawl gulfs our dwindling open spaces. Studies show that far more trails are needed to meet the needs of today's population, not to mention tomorrow's.

Recreation agencies, conservation organizations, and governments of all levels are beginning to realize that better measures must be taken to protect and manage our river and trail resources effectively. Two federal laws passed in 1968—the National Wild and Scenic Rivers Act and the National Trails System Act—paved the way in this area a decade ago. These Acts established national systems of rivers and trails and set up procedures under which new components could be added to each system. Still, progress was agonizingly slow until passage last November of the National Parks and Recreation Act which increased both systems dramatically.

Federal actions have been mirrored on other levels. Many states have set up similar programs within their boundaries. Local efforts, too, have grown more numerous and effective. Yet much more remains to be done.

In 1978, the National Park Service assumed new responsibilities in the protection and management of both rivers and trails. In January, Secretary Andrus charged the Service with the responsibility for conducting for the Interior Department the studies required prior to designation of rivers as wild, scenic, or recreational under the national system. Our responsibilities and opportunities increased again when the National Parks and Recreation Act added 17 new rivers to the study list and when we were charged with locating the routes and developing management plans for three of the five new trails authorized by the Act.

As Director of the National Park Service, let me underscore our enthusiastic acceptance of these new responsibilities. We welcome the opportunity to help develop a protected system of rivers and trails for America. At every level our river and trail programs must have a high priority. We will tap all our resources to meet these new challenges. And we will offer the best possible technical assistance to state and local agencies who wish to develop their own programs.

For I am firmly committed to press on, within the Service and in partnership with all who share these concerns, to preserve the nation's free-flowing streams and meandering trails . . . to accord them the value they deserve as precious natural treasures . . . and to assure that all Americans have access to their recreational and inspirational riches.

A challenging task, most assuredly. To preserve resources while making them available to an ever-growing public demands both delicate and farsighted management. Yet these challenges must be faced and met by managers within the Service and by other national, state, and local agencies if, together, we are to accomplish our mission.

The editors of *Trends* have planned this special issue to help all of us to understand these crucial challenges and to get action started to meet them. In these pages, you'll find many of the issues surrounding rivers and trails addressed, as well as scores of practical tips and illustrative case examples. You'll discover just what federal designation does and does not mean . . . and read about good state, regional, and local programs.

The linear configuration of river and trail corridors creates management problems of a somewhat different nature than those connected with traditionally shaped park areas. These problems, and hints on their possible solution, are discussed by experienced linear park administrators of national and local park agencies.

Further articles explore the development of urban riverscapes . . . the Appalachian Trail project . . . less-than-fee land acquisition methods . . . management of whitewater rivers . . . recreational carrying capacity . . . the relationship between instream flow and recreation . . . and how to plan a safe yet challenging sensory awareness rope trail.

With the information, guidance, and motivation of this issue of *Trends*, let us all move forward together, striving with new commitment for the effective protection and management of America's rivers and trails. They're too precious a part of our natural heritage to lose.

An Analysis of the National Wild and Scenic Rivers System and Alternative Means of River Preservation

by Robert Eastman and Howard Brown

The need to preserve portions of our natural heritage is not new. However, specific efforts to protect one important element, our free-flowing streams, is fairly recent.

The 1961 report of the Senate Select Committee on National Water Resources recommended: "That certain streams be preserved in their free-flowing condition because their natural scenic, scientific, aesthetic, and recreational values outweigh their value for water development and control purposes now and in the future." In January 1962, the final report of the Outdoor Recreation Resources Review Commission reinforced this recommendation, concluding: "Certain rivers should be preserved in their free-flowing condition and natural setting." To accomplish this objective, the Commission recommended that studies be made to identify rivers or river segments having values worthy of preservation.

Later in 1962, the Secretaries of the Interior and Agriculture directed a joint departmental effort to set up a national system of free-flowing rivers. This endeavor culminated in a detailed study of 22 rivers which appeared to deserve some type of protection or preservation. Legislation to accomplish this objective was drafted and submitted to the Congress.

Wild and Scenic Rivers Act

After some six years of discussion and debate, the Wild and Scenic Rivers Act (P.L. 90-542) became law in October 1968. The Act established the principle that certain selected rivers of the nation which, with their immediate environments, possess outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, are to be preserved in a free-flowing condition and protected for the benefit and enjoyment of present and future generations.

The Wild and Scenic Rivers Act set up the National Wild and Scenic Rivers System, composed of eight initial rivers, and identified 27 other rivers to be studied for possible inclusion in the national system. Subsequent amendments and Secretarial designation of state-administered rivers have resulted in a system of 28 rivers—totaling some 2,318 miles (3,709 km). An additional 48 rivers have been designated for study as potential components.

The National Wild and Scenic Rivers Act preserves rivers as they exist today. NPS

NPS Role

The studies are conducted by the Department of the Interior and, when national forest lands are involved, the Department of Agriculture. Initially, responsibility for the studies within Interior was delegated to the Bureau of Outdoor Recreation (later redesignated the Heritage Conservation and Recreation Service). On January 25, 1978 the study responsibility was transferred by Secretarial Order to the National Park Service. The Forest Service continues to conduct the study of those rivers assigned to the Department of Agriculture.

Timing was auspicious in this transfer, since the Service was then revising its new area study process and could integrate river studies into the revision. A three-phase study process resulted.

During Phase I (evaluation and programming), the rivers to be studied during the fiscal year are identified, priorities established and coordinated with other new area studies, and study responsibility assigned to appropriate offices.

During Phase II (the alternatives study period), the field study is conducted; resource values identified; study boundaries delineated; economic, cultural, and physical data on the area collected; costs estimated; alternative means of protecting and managing the resource identified; and a report on the proposal prepared.

Phase III (the post-study period) involves the Service and Department establishing their position with respect to the proposal, and transmitting an appropriate report and any legislative proposal and/or supporting documentation to the Congress.

Public Involvement

This study process provides reasonable opportunity for public involvement. Public meetings normally are held when the study is initiated, to inform the public as to the purpose of the study, assure everyone that no federal land acquisition is associated with the study, and seek input to the study. A second meeting is held when the alternatives have been identified, to solicit reactions to various alternatives and identify any others which may have been overlooked. Finally, the public has the chance to review and comment on any environmental impact statement prepared on a proposal.

Concept and Philosophy of the Act Underscore State Role and Preserve Status Quo

Although passed during a period of fairly liberal views regarding large-scale federal land acquisition, the Wild and Scenic Rivers Act recognized that states should play an important role in preserving rivers and that federal acquisition of lands and use of condemnation should be limited.

Provisions of the Act encourage the inclusion of state rivers into the national system. Upon request of the Governor of a state, rivers which have been designated by that state legislature as wild, scenic, or recreational, and which meet the criteria set forth by the Congress as well as supplemental criteria developed by the Secretary of the Interior, may be protected as part of the national system. In addition, the Act authorizes the Secretary to provide technical assistance, advice, and encouragement to the states, political subdivisions, and private organizations in their efforts to establish state and local wild, scenic, and recreational river areas.

Fee acquisition of lands is limited to an average of no more than 100 acres per river mile (40 ha per 1.6 river km). Power of eminent domain is suspended when 50 percent of the authorized area is in public ownership. Scenic easements may be acquired to make the total acquisition not more than an average of 320 acres per mile (128 ha per 1.6 km)—equivalent to a river corridor averaging one-half mile (.8 km) wide, a quarter of a mile (.4 km) on either side of the river. This permits continued agricultural and residential use near rivers in the system, but precludes heavy development adjacent to the river which would impair its character.

With some exceptions, the Act serves as *preservation* legislation. A river is studied as it exists today. If it qualifies for designation, it is classified wild, scenic, or recreational depending upon the evidence of man's presence in the river corridor. A wild river displays little or no evidence of man's presence, permitting the user to enjoy essentially a wilderness experience; a recreational river reflects considerable evidence of man. Management plans should be directed toward maintaining those qualities which led to designation.

Usually, outright purchase of corridor land is necessary only where access points or facilities need to be located.

The Act recognizes that inclusion of a river in the national system is a positive alternative to development of that river's potential for hydroelectric power, municipal/industrial water supplies, flood control, and other purposes. Wild or scenic river designation results in non-consumptive use of water, unlike the above uses. Yet, a river which had been protected for a number of years under the Act, could be dedicated for another use by Congress if the need for its water became great enough to override its preservation values.

Perhaps the following words of the Act best sum up its philosophy: "The Congress declares that the established national policy of dam and other construction at appropriate sections of rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition . . . ."

Administration of Rivers Under the National System

The national system established by the Wild and Scenic Rivers Act includes both federal- and state-administered rivers. Federal-administered rivers are designated as components of the system by an Act of Congress; state-administered rivers are added to the national system upon approval by the Secretary of the Interior of an appropriate application by the Governor(s) of the state(s) involved.

Under the original Act, state-administered rivers within the national system were to involve no expense to the United States. The restrictive interpretation placed upon this provision precluded designation as state-administered components of any river areas that included large tracts of federal

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lands. On November 10, 1978, the National Parks and Recreation Act (Public Law 95-625, further described below) excluded federally owned lands from this restrictive provision.

Additional Impacts of the Act

• *Mining.* The Act prohibits federal agencies from licensing, financing, or assisting in any way in the construction of water resource projects on—or that would adversely impact rivers on—the national system or areas designated for study as potential components.

The Act empowers the Secretaries to prescribe regulations under which prospecting and mining operations may be conducted on rivers in the system. Subject to valid existing claims, the minerals in federal lands which are part of the system and constitute the bed or bank of a river designated as wild, are withdrawn from all forms of appropriation under the mining laws and from the operation of mineral leasing laws. Likewise, minerals in federal lands which constitute the bed or bank or are situated within one-quarter mile (.4 km) of the bank of a river designated for study as a potential component of the national system are withdrawn from all forms of appropriation under the mining laws during the period specified for protection under the Act.

• *Hunting and Fishing.* States retain jurisdiction and responsibility for fish and wildlife, except in cases where the administering Secretary may establish zones where, or periods when, no hunting is permitted for public safety purposes, or where the lands involved are part of a national park or monument.

• *Restriction on Use of Federal Lands.* The Act provides that heads of all federal agencies will review all of their management activities, policies, regulations, contracts, and plans involving lands which include, border upon, or are adjacent to rivers designated for study to assure that such activities are consistent with the purposes of the Act. The 1978 National Parks and Recreation Act amended this provision, extending the requirement to cover both state- and federal-administered components of the national system.

• *Corridor Protection.* One shortcoming of the Act has been identified by several individuals and organizations. While rivers designated for study are protected against adverse impact by the construction of federal or federally assisted water resource projects and activities under federal mining legislation, there is no control over development that takes place within the corridor or on private lands adjacent to the river.

Progress of the System

For many river conservationists, the growth of the national system was agonizingly slow. Then, in November 1978, came an event which represented a landmark in the system's development—passage of the National Parks and Recreation Act. The Act authorized the addition of eight new rivers and added seventeen new study rivers for possible future inclusion in the system—increasing by approximately 40 percent both the total mileage of the system and the number of rivers protected. Also contained in the Act were three important policy changes:

• that state-administered rivers be administered without expense to the United States *other than for administration and management of federally owned lands.*

• that all federal agencies with jurisdiction over lands which include, border upon, or are adjacent to any river included, or being studied for inclusion, within the national system manage these lands so as to protect the river in accordance with the purposes of the National Wild and Scenic Rivers Act.

• that the appropriate Secretary may, at his discretion, lease federally owned land within the boundaries of any component of the system.

What's the "Best" Means of River Preservation?

What are the alternatives to federal designation under the Wild and Scenic Rivers System? One is state designation independent of the federal system.

Roughly half the states have river preservation systems of one sort or another. Some provide strong protection; others do little more than put stars in front of the rivers' names. For an example of state river systems, see the article in this issue of *Trends* on the Minnesota program, probably the strongest in the country.

Other options include local governmental action (such as by counties or special districts) and private action by landowner associations, land trusts, or other citizen organizations. While some sort of state or federal recognition may be necessary to fully protect a river, there is tremendous potential for innovative, popular, and effective action tailor-made to suit local circumstances. Another article in this issue describes actions being taken to protect the Blackfoot River in Montana. This is an excellent illustration of local and private preservation action, and of cooperation by all groups involved.

As dams and development destroy our free-flowing streams, effective river protection grows crucial.

So which is best? The answer must come on a river-by-river basis, depending upon the values and threats of that particular river and upon the political climate and institutions in the region.

Preservation systems such as the National Wild and Scenic Rivers System, and state, local, or private alternatives all serve three main purposes:

1. Protection of the river itself—principally from water resource development projects.
2. Preservation of the river corridor.
3. Management of the river's use.

Protecting the River

In terms of protecting the river itself, there is clear advantage to federal designation—either direct or state-administered. Jurisdiction over navigable waters resides with the federal government. State or local action can and often does seek to prohibit dams and channelization, and undoubtedly serves as a significant impediment. But, in a strict legal sense, it cannot stop a federal or federally licensed water project. And private or local government action would have very little effect against water projects. Under the federal system, rivers are protected from water projects immediately upon designation for study. For state-administered rivers, protection is guaranteed upon approval for inclusion in the system.

Preserving the Corridor

In preserving the river corridor, the federal system is at a legal disadvantage, for it cannot make direct use of zoning or land-use regulation. The federal program must rely upon acquisition of the land itself or of scenic easements and other rights to that land. Federal acquisition of a river corridor can be slow, expensive, and unpopular.

State systems can and do utilize acquisition, but also have the choice of some sort of land-use regulation. As you can see from the chart on page 8, most state systems have both authorities, though they use both sparingly since neither tends to win popularity contests with local landowners.

Private organizations such as The Nature Conservancy and local equivalents have proven marvelously effective in their ability to protect lands through purchase. They can move quickly and flexibly in the use of a variety of real-estate devices to suit particular landowners.

Managing River Use

Except for the private level, where there would not likely be sufficient authority, management of river use can probably be carried out equally well at any level. Specific circumstances, such as

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having facilities and/or personnel in the area, will be important factors.

The most important consideration may be how designation itself will affect use of the river. A frequent concern is that designation, particularly federal, will attract increased visitation. (An equally frequent concern is that usage will decrease and tourism suffer.) No good research has been done on this, but fears seem to be unwarranted.

River usage is increasing dramatically and will continue to do so, but wild and scenic designation is probably of minor influence in this phenomenon—especially compared to such factors as proximity to an urban area. State or local designation presumably would attract less additional usage than federal designation. Yet, as the number of national wild and scenic rivers increases, the significance of designation on attracting visitation should decrease. The important thing to remember is that designation does make possible management of the river's use which undoubtedly will increase regardless of designation.

Time and Money Factor

Another factor in choosing the best means of river protection is the amount of time and money involved. The federal system can work very slowly. Two Acts of Congress are required—one for study authorization and one for designation. Each Act requires the full routine of bill introduction, hearings, reports, etc. In between, a full formal study, including an environmental impact statement, must be done. Protection from water projects begins with the study authorization, but protection for the corridor doesn't come until after designation, completion of a management plan, and appropriation of funds for land acquisition.

Some states may seem just as slow. But generally, well-supported state and local programs can move faster. And private organizations can move very quickly within the limits of their budget and authority.

Zoning is, of course, much quicker and cheaper than acquisition, but no financial help is available. State or local acquisition can utilize matching grants from the Land and Water Conservation Fund, but federally managed rivers impose no cost on local government. To correct this financial disincentive to state and local action, during the 96th Congress, the American Rivers Conservation Council will seek legislation to allow funding assistance for land-use regulation by state preservation programs, or alternately, to provide a special funding source for acquisition within a river corridor if tied to adequate land regulation of adjacent areas. It is hoped that Congress will act on these and other proposals to encourage state and local initiatives, both independently and as state-administered federal rivers.

Political Climate

The final, and perhaps most important, consideration in deciding how best to protect a river, is political feasibility. Often, the local area of a deserving river may harbor strong distrust of the federal government. While the state government may not be much more popular, generally, localized control may be more acceptable. On the other hand, if opposition by local development interests is likely, the river will stand a better chance at the federal level where the influence of those development interests may be lessened. The attitudes of the particular people you must deal with at the various levels of government is of crucial consideration.

A variety of choices exist. None is inherently better than another. The best advice is to do your homework thoroughly. Know the special values of your river that need protection. Be aware of the potential threats that need warding off. Learn what kinds of actions are likely to be most acceptable to landowners and elected officials. Then make sure that everyone feels he has had a voice in choosing the best course of action.

HCRS Rivers Inventory Adds New Dimensions

Policy responsibility for the National Wild and Scenic Rivers Act and for river preservation generally remains with the Heritage Conservation and Recreation Service (HCRS). HCRS currently is doing a nationwide inventory of rivers. While one purpose of the inventory is to identify a highly selective set of rivers which could be put forth as a highest priority list for study under the Wild and Scenic Rivers Act, another intention is to identify and provide basic data for a broader set of worthy rivers that might merit protection at the state level or by some other federal means.

Even if the National Wild and Scenic Rivers System were to grow far faster than it has up until now, it still will provide protection for only a minor fraction of our nation's rivers and streams. HCRS is exploring the possibilities for some sort of minimal protection for rivers on a more general basis. The National Rivers Inventory will identify a set of rivers to which such proposals logically could be applied.

A first phase of the inventory has been largely completed for the Eastern half of the country. This phase emphasized the

State-Enacted River Preservation Programs [1]

	Date Enacted	Method of Designation [2]	Number of Rivers	Number of Miles	Prohibit Instream Modifications	Land Use Controls	Condemnation Powers	Management of Use and Users
California	1972	Legislative	9	1130	Yes	Yes	No	Yes
Georgia	1969	Legislative	0	0	Yes	Yes	Yes	Yes
Indiana	1973	Administrative	2	59	Yes	Yes	Yes	Yes
Iowa	1970	Administrative	1	80	No	No	No	No
Kentucky	1972	Legislative	8	110	Yes	Yes	Yes	Yes
Louisiana	1970	Legislative	43	2	Yes	No	No	Yes
Maryland	1968	Legislative	9	441	Yes	Yes	No	No
Massachusetts	1971	Administrative	0	0	Yes	Yes	Yes	Yes
Michigan	1970	Administrative	6	641	Yes	Yes	No	No
Minnesota	1973	Both	4	200	No	Yes	No	Yes
New York	1972	Legislative	70	1214	Yes	Yes	Yes	Yes
North Carolina	1971	Legislative	2	36	Yes	Yes	Yes	Yes
North Dakota	1975	Legislative	1	213	Yes	No	No	No
Ohio	1968	Administrative	8	415	Yes	Yes	Yes	Yes
Oklahoma	1970	Legislative	5	151	Yes	No	No	No
Oregon	1970	Legislative	8	523	Yes	Yes	Yes	Yes
Pennsylvania	1972	Legislative	0	0	Yes	No	Yes	Yes
South Carolina	1974	Administrative	2	60				
South Dakota	1972	Legislative	0	0	Yes	Yes	No	Yes
Tennessee	1968	Legislative	11	350	Yes	Yes	Yes	Yes
West Virginia	1969	Legislative	5	205	Yes	No	No	No
Wisconsin	1965	Legislative	3	91	Yes	Yes	Yes	Yes
Virginia	1970	Legislative	5	83	Yes	No	No	Yes

Chart is based on similar charts developed by the Virginia Commission of Outdoor Recreation and by Curtis E. Alling, Texas A&M University

[1] Some states, such as Alabama and Florida, have administratively-established programs. Although it has no established rivers system, Maine does enforce protective measures, under which it designated the Allagash, also incorporated into the national system.

[2] In all cases where rivers are designated administratively, the state legislature may also, of course, designate rivers.

"naturalness" of the rivers. Starting with all segments over 25 miles (40 km) in length, a set of negative filters was used to screen the rivers against various criteria, particularly the amount of streamside development.

A second phase of the inventory will emphasize the rivers' positive recreational and aesthetic values. Rivers subjectively considered of high importance within various categories (such as fishing, wildlife, boating, history, streamside activities) will be additively compiled. This second phase will seek also to identify rivers of importance because of ready accessibility to urban areas.

During 1979, HCRS hopes to complete the first or natural phase for the West and the second or recreational phase for the East.

Local Input Will Be Increasingly Crucial

Throughout the inventory, particularly the recreational phase, there will be a considerable need and opportunity for input from state and local agency personnel and from the public. The importance of public involvement in *all* aspects of river preservation efforts cannot be overemphasized.

The politics of river preservation are extremely localized. At the federal level, and in most states, each Wild and Scenic River is individually authorized, as is each and every dam or channelization project. Rather than fighting for or against clean water or air on a national basis, the fight is a continuous series of battles for the lives of particular rivers and streams. Thus the feelings of the local Congressmen and Senators become all-important. And their feelings will be influenced by those of their constituents who may be directly affected. A landowner, fearing that Wild and Scenic designation would take away his land, will put up a tremendous fight. A local official, indignant because he wasn't consulted, can kill a designation without even knowing what it would mean.

Probably the single biggest problem that has faced the Wild and Scenic Rivers program has been misunderstanding of just what it means for the local community. It is essential that landowners and other local citizens know what the program is all about and, as much as possible, exactly how it will affect them. They must find out about the proposal early, on an individual or small-group basis, prior to any big public meetings or media coverage, and they should be able to feel that they have had full opportunity to participate meaningfully in the planning process.

A tall order. But one worth the effort, because it can make the difference between a proposal breezing through or getting stuck in a quagmire. Similarly, in cases where a development interest is the primary opposition, a citizenry informed as to the threat and to the fact that it need not fear designation, can prove to be mighty champions.

The Future

So where does the future of river preservation lie? It lies with an accelerating growth in the National Wild and Scenic Rivers System, but with each addition based on careful homework. It lies with a much expanded river preservation effort at the state level, again with lots of hard work needed. The number of rivers and other natural areas needing preservation almost demands that the states pick up a greater share of the burden and that they do so by making use of zoning and measures other than acquisition. The federal government should provide some incentives and the time has come to establish those incentives *now*.

Perhaps most importantly, the future lies with some sort of protection for rivers on a broad basis. Even if they were simply granted some additional paperwork protections against destruction by other state or federal programs, it could be of tremendous help, since, sadly, the great majority of river destruction is by federal, federally-licensed, or federally-assisted projects.

Robert Eastman is a program coordinator in Park Planning and Environmental Quality with the National Park Service. Howard Brown is Director of the American Rivers Conservation Council.

The Appalachian Trail

by Dave Richie

"Appalachian Trail" means adventure, beauty, solitude, and escape from the confusion of modern civilization to millions of Americans. To many, it is enough to know the Trail is there. Roughly four million hikers sample it each year for short hikes or extended trips. But to the 70,000 members of the maintaining trail clubs, the Trail is a personal responsibility.

The existence of the Appalachian Trail is a testimony to the dedication and contributed labor of volunteers associated with the Appalachian Trail Conference. First proposed by Benton MacKaye in 1921, the concept of the Trail triggered a volunteer movement without parallel in the history of outdoor recreation in America. By 1937, a continuous trail from Georgia to Maine following the crests of the Appalachian Mountains had been cleared, marked, and opened to foot travel. Over 60 trail clubs coordinated by the Appalachian Trail Conference continue to maintain and manage much of the Trail's 2,050 miles (3,280 km).

The remarkable history of volunteerism and the Appalachian Trail is the theme of another article in this issue of *Trends*. However, this history is so fundamental to administration of the Trail that it requires mention here, as well.

Early Federal Role

The National Park Service and U.S. Forest Service first became involved as the custodians of lands crossed by the Trail. Active cooperation with the trail clubs was formalized in 1938 by an NPS-USFS agreement "for the promotion of the Appalachian Trailway." The Trail remained almost exclusively a private endeavor, however, until the National Trails System Act became law in 1968.

National Scenic Trails were established in 1968 as the long-distance trail component of a national system of trails. The Appalachian and Pacific Crest trails were designated National Scenic Trails at that time with administration by the Secretaries of the Interior and Agriculture. The National Park Service was assigned lead agency responsibility for the Appalachian Trail and the Forest Service for the Pacific Crest Trail.

Acceptance of a major federal role in the Appalachian Trail by the volunteer trail community reflected growing pressures on the Trail from an expanding eastern megalopolis. Nearly half the Trail lay outside government ownership, protected mainly by handshake agreements with private landowners. As these lands became more accessible and valuable for development, simply maintaining continuity for the Trail had become a constant hassle. Increasingly, the Trail had to be relocated from desirable locations to secondary routes, sometimes to the edges of busy highways. The basic incentive to the trail community for federal legislation was the need for a legally protected right-of-way, an acquisition task beyond the capability of private trail groups.

Unfortunately, the 1968 Act did not produce this desired result for the AT. Whether it was the unclear mandate for federal acquisition in the Act or simply governmental inertia, very little right-of-way had been acquired by states or the federal government by the time a Congressional oversight hearing was held in March 1976. That hearing helped give the Trail a high National Park Service priority which, along with alarm over increasing threats to the Trail, led to amendatory legislation in March 1978.

The 1978 bill sharply increased the authorization for Appalachian Trail right-of-way acquisitions from $5 million to $90 million and set a deadline of September 30, 1981 for substantial completion of the Trail protection task. In addition, the bill called for annual progress reports and completion of a comprehensive plan for management, protection, acquisition, development, and use of the Trail.

Trail Protection—National, State, and Private Support

Until 1978, Trail protection efforts were confined to tract and right-of-way acquisitions by the Forest Service within national forest boundaries and acquisitions by several states, most notably Maryland and Virginia. More recently, New Jersey, Pennsylvania, New York, and Massachusetts have purchased Trail rights-of-way with the help of matching funds from the Secretary of the Interior's contingency reserve.

The prospect of substantial National Park Service right-of-way acquisitions outside existing federal boundaries has created a totally new situation for the Trail. Nearly $15 million is available in this fiscal year, and a comparable amount is included in the President's budget for fiscal year 1980.

To the great credit of the state government partners in the Appalachian Trail project, an enhanced federal role has been supported by continuing state commitment to the Trail protection process. Maryland and New Jersey still expect to provide protection of an adequate right-of-way without direct National Park Service acquisitions.

Through scenic easements, the government tries to protect trail corridors yet retain private land ownership. NPS

Maine and Massachusetts are expanding their protection efforts, while New York, Pennsylvania, Virginia, and Connecticut plan a more limited role in direct acquisitions but are cooperating actively with the Park Service in its acquisition program.

This remarkable turn of events can be explained only in terms of the volunteer traditions of the Appalachian Trail. The dedication of the volunteers contributes directly to the commitment of state and federal employees involved in the project and helps provide a political climate where that commitment can be acted upon.

In addition to the leadership provided by volunteers through the Appalachian Trail Conference, the Appalachian National Scenic Trail Advisory Council has been a catalyst for action. The 35-member Council has had distinguished leadership since 1975 from Charles H. W. Foster, Dean of the Yale School of Forestry and Environmental Studies. With representatives of each of the 14 Appalachian Trail governors, the Departments of the Interior and Agriculture, the Appalachian Trail Conference, and other private organizations, the Council has been able to focus attention on the problems of the Trail and to win support for corrective measures. It has become both the symbol and the mechanism for the flourishing federal, state, and private partnership.

Despite these measures of support for Trail protection, the task ahead is impressively difficult. Over 800 miles (1,280 km) of Trail require additional protection and close to 300 of those miles (480 km) involve Trail relocations away from roads and houses to a more acceptable permanent route. Final trail location and boundary widths are decided following intensive study by volunteer and professional trail experts, and with the advice of affected organizations and landowners.

Controversies Sharpen Management Sensitivities

In some cases, planning for right-of-way acquisitions has erupted into controversy. Misunderstandings and a difficult Trail location situation led to organized protest in Cumberland Valley (PA), where the Trail presently follows roads for most of a 12-mile (19 km) crossing of a developing area south of Harrisburg. Trail protection has become a political issue in Vermont and, more recently, in northwestern Connecticut.

These controversies have provided positive benefits to the Trail protection program. Local committees have evolved in each situation, bringing together representatives of local, state, and federal government, trail clubs, and landowners in an effort to balance accommodation of Trail protection with local needs. Defending the Trail protection program under fire has resulted in a better understanding of the potential conflicts and policies have been moderated accordingly.

For example, initial response to encouragement in the National Trails System Act to use less-than-fee forms of protection was to find reasons why easements were not acceptable. As this position was tested and as trail clubs, local governments, and landowners expressed their opinions, the National Park Service position has evolved from resistance to easements to tentative support of a highly-restrictive easement to enthusiastic acceptance of easements that balance the needs of Trail users with those of landowners who seek to continue productive use of Trail corridor lands. Although many landowners may still choose to sell their full interest, Park Service willingness to accommodate landowners through easements has been a key factor in sustaining support for Appalachian Trail protection.

National Park Service right-of-way acquisitions have now begun in Massachusetts, New York, Virginia, and West Virginia. The first acquisitions in New Hampshire and Pennsylvania will occur soon. Vermont and Connecticut will be underway later this year or next. It is expected the September 1981 deadline will be met while making maximum efforts to provide a protected Trail without losing local support.

Trail Management

The importance of local citizen support becomes apparent when vulnerability of the Trail corridor is considered, meandering as it will through miles of otherwise privately-held land. It would be difficult enough to protect the Trail corridor from abuse with park rangers on constant patrol. The intention, however, is to rely on largely-volunteer trail clubs to manage much of the Trail outside state and federal management units, under cooperative agreements with the Park Service and the states involved.

Local uncertainty about the adequacy of Trail management plans has been among the most difficult issues to address in acquisition planning to date. Concern about fire, trespass, hunting, loss of privacy, off-road vehicles, and litter tends to be particularly strong where Trail relocations are contemplated. Landowners who have lived with the Trail in the past tend to be a good deal more accepting, but even Trail supporters acknowledge that problems exist

Most landowners make a distinction between "real hikers" and those "other people" who are responsible for such problems as trail shelter parties, carelessness with fire and litter, and trespass. Problem areas usually can be pinpointed Shelters close to road access, for example, are much more likely to be

Parts of the Appalachian Trail need to be rerouted away from public highways. NPS

abused than those more than a mile (1.6 km) from a trailhead. Popular destination points for weekend campers, such as Sunfish Pond in New Jersey and Dark Entry Ravine in Connecticut, are especially difficult challenges.

These situations can be dealt with through proper Trail management. In some cases, rerouting the Trail or moving a shelter may provide the answer. In others, placing caretakers on-site in busy periods has proven effective.

Trail Neighbors

More difficult are the subtle abuses that aggravate Trail neighbors. When hikers were less common, an occasional request for water, directions, or even a place to camp provided a welcome diversion. In most areas along the Trail, these kinds of interruptions have become too frequent and tend now to generate hostility toward the Trail and its users.

There is no simple answer to the privacy issue. Good relations between hikers, particularly long-distance hikers, and Trail neighbors have been one of the richest parts of the Appalachian Trail experience. By moving the Trail away from residences where possible and purchasing easements to prevent new building close to the Trail, existing friction can be reduced substantially.

Effective education of hikers and other users of the rural countryside is planned and should provide additional improvement. Probably well over half of those using the Appalachian Trail have little idea of what an ethic of responsible behavior might include. The hiking community can and should do a much better job in both on-the-trail and more general educational efforts.

Volunteer trail management can work better than it has in the past with more active help from Trail neighbors. Extensive use of easements tends to foster a concept of joint stewardship by landowners and trail clubs. Additional help may be forthcoming through local committees that now are working on Trail corridor planning but could focus more on management issues. Trail clubs will be seeking more members close to the Trail instead of relying to as great an extent on maintainers from farther away. Help from local fire departments, law enforcement organizations, and conservation groups will be sought more actively.

Although the elements exist for successful Trail management without active state or federal support, an adequate system is not yet in place. To help answer the fears of new Trail neighbors, the Appalachian Trail Conference plans to delay Trail relocations until an adequate Trail has been constructed and local trail clubs are ready to assume responsibility for public use of the new Trail corridor. Meanwhile, emphasis will be placed on doing a better job of managing the existing Trail.

A Cooperative Success Story

While acknowledging that improvements in Trail management are needed in some areas, it is well to note that problems are surprisingly limited. The popularity and quality of the Appalachian Trail is a tribute both to the volunteers who have sustained it and to the hikers who enjoy it. The overwhelming support that protective legislation received in Congress is proof that the Appalachian Trail is one of the nation's greatest success stories. It is amazing to think that a recreation resource of such magnitude and quality is essentially the work of organized volunteers. The National Park Service and the Forest Service, the principal federal partners, are proud to be a part of that tradition.

Future management of the Trail will be guided by principles which have evolved from the Appalachian Trail tradition. Stan Murray, a long-time Chairman of the Appalachian Trail Conference, contributed the following definition as an introduction to those principles:

"The Appalachian Trail is a way, continuous from Katahdin in Maine to Springer Mountain in Georgia, for travel on foot through the wild, scenic, wooded, pastoral, and culturally significant lands of the Appalachian Mountains. It is a means of sojourning among these lands, such that the visitors may experience them by their own unaided efforts.

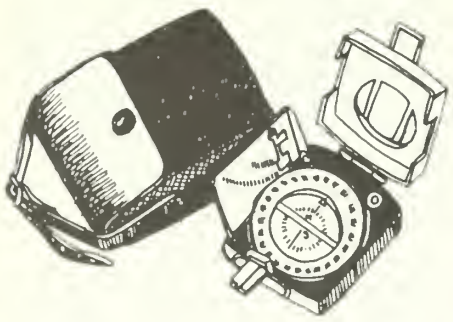
In practice, the Trail is usually a simple footpath, purposeful in direction and concept, favoring the heights of land, and located for minimum reliance on construction for protecting the resource. The body of the Trail is provided by the lands it traverses, and its soul is in the living stewardship of the volunteers and workers of the Appalachian Trail community."

Dave Richie is the National Park Service Project Manager for the Appalachian Trail, with headquarters in Harpers Ferry, WV.

The National Trails System

Trails have played a vital part in America's tradition. From Colonial days through modern times, Americans have sought trailways as a means of reaching a particular destination or for pleasure and relaxation.

Walking for pleasure is among the favorite outdoor recreation pursuits of Americans. A 1972 survey for the Bureau of Outdoor Recreation (now the Heritage Conservation and Recreation Service) showed that walking for pleasure was the most popular outdoor recreation activity in terms of activity days of participation. Bicycling and nature walks are also very popular. Projections indicate that all trail-related activities, including hiking, off-road motorbike and all-terrain vehicle use, and horseback riding, will continue to gain in popularity, and that more trails will be needed to accommodate this increase.



In 1968, the Congress passed the National Trails System Act (P.L. 90-543) which provided the framework for a national system of trails. The Act specifies that trails be established (1) primarily near urban areas of the nation and (2) secondly, within established scenic areas more remotely located, in order to "provide for the ever-increasing outdoor recreation needs of an expanding population and to promote public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas of the Nation."

The Act designated the Appalachian Trail and the Pacific Crest Trail as the initial components of the national system. It further established a procedure by which additional components can be authorized and designated as National Scenic Trails by the Congress and added to the system.

Fourteen routes were designated in the Act for study as potential components. To date, studies on twelve of these have been completed and forwarded to Congress, and eight more routes have been authorized for study.

In November 1978, the National Parks and Recreation Act amended the original Act to establish a new category within the National Trails System—that of National Historic Trail. The Lewis and Clark Trail, Oregon Trail, Mormon Trail and Iditarod Trail were designated National Historic Trails and the Continental Divide Trail was added to the system as a National Scenic Trail. The National Park Service will identify the trail route and develop a management plan for the Lewis and Clark, Oregon, and Mormon Trails. Similarly, the Bureau of Land Management will handle the Iditarod Trail, and the Forest Service, the Continental Divide Trail.

Under the recent realignment of functions between the National Park Service and the Heritage Conservation and Recreation Service, NPS will have the responsibility for studying future trail routes authorized by the Congress and for completing the studies of the routes presently authorized

Another major category of trails established by the National Trails System Act is that of National Recreation Trails. These may be established and designated by the Secretary of the Interior upon application by the federal agency, state or political subdivision, or private organization having jurisdiction over the lands involved. (The Secretary of Agriculture may designate National Recreation Trails on lands administered by his Department.)

Such recreation trails are located so as to be available to the greatest number of people—for example, within a suitable distance for day use by urban areas, or within existing federal and state parks, forests, and other recreation areas. It is not a prerequisite that a National Recreation Trail be scenic, although significant natural and cultural features of the area should be incorporated or made an adjunct of the trail whenever practical.

National Recreation Trails are compatible with a variety of developed and undeveloped resources, including stream valleys and their flood plains; utility rights-of-way; abandoned railroad or streetcar rights-of-way; irrigation and transportation canals; levees and flood dikes; federal, state, and local parks, forests, and other resource management areas; and privately owned or managed areas such as forests and nature centers. Although the primary purpose of a National Recreation Trail is for outdoor recreation, other uses such as power lines, sheep driveways, and logging road operations may be compatible if such operations will not interfere substantially with the nature and purpose of the trail.

A Triumph of Volunteerism

by Henry W. Lautz

The Appalachian Trail and the Appalachian Trail Conference came into being together in the mid-1920s due to the work of several people, the most prominent of whom was Benton MacKaye. The building of the Conference and the building of the Trail went on side by side. In fact, it became a symbiotic relationship that has lasted 53 years and has provided the United States with one of its best known and most popular recreational resources. Our estimates indicate that more than 4 million people used the Trail last year.

The Trail is more than 2,000 miles (3,200 km) long and traverses the ridges of the Appalachian Mountains from Springer Mountain in north-central Georgia to Mt. Katahdin in north-central Maine. It passes through the wild and primitive lands of north Georgia, North Carolina, and Maine. It follows down the main streets of Damascus, Virginia and Hanover, New Hampshire and it crosses through suburban areas an hour from Washington, DC and New York City. The trail winds through 14 states and lies within a half-day's drive of half the population of the United States.

The Trail Conference is made up of sixty volunteer-based clubs, located along the Trail, having a membership of approximately 70,000 as well as 13,000 direct members of the Conference itself. The clubs vary from those having only a dozen or so members to the Appalachian Mountain Club which has 23,000 members. Some of the clubs have as their sole purpose work on the Appalachian Trail; for others, the Appalachian Trail represents just one of their many areas of work and concern.

The Conference is governed by a 24-member Board of Managers elected at biennial meetings by the Conference membership. In addition to some of the clubs which have staffs, the Conference has a professional staff of 15. It is headquartered in Harpers Ferry, West Virginia and has regional offices in Hanover, New Hampshire; Allentown, Pennsylvania; and Norris, Tennessee.

Appalachian Trail hiker pauses to enjoy a vista in Virginia's Blue Ridge Mountains. ATC

The Conference is a nonprofit organization dedicated to the preservation and management of the Appalachian Trail and the enhancement of self-organized volunteerism. The actual maintenance work along the Trail is done by assigned clubs; oversight and coordination responsibility rest with the Conference.

At this time, approximately one-third of the Trail is located in national forests; one-third in national parks, state parks, and state forests; and one-third on private land, with the permission of the landowner. There are also, unfortunately, nearly 200 miles (320 km) located along the sides of public roads.

The kinds of work performed by the various clubs, under the coordination of the Conference, differ and depend to some extent upon the nature of the land over which that section of the Trail passes. In some areas, the Trail is entirely maintained and managed by the local club. In others, it is a joint undertaking between the club and the local land managing agency. In a few areas, the clubs' traditional roles have been absorbed entirely by a government agency.

Maintenance

While considerable variation exists along different sections of the Trail, there are some standard tasks which most clubs perform. Most basic of these is routine light maintenance. This involves keeping the summer growth cut back, clearing out water bars, picking up and carrying out trash, repainting blazes, replacing signs, and similar tasks.

These kinds of activities traditionally have consumed the major portion of the Trail volunteers' time. They can be performed by young and old and must be done on a routine basis.

Trail Construction

In addition to light maintenance, clubs also must be able to do construction and reconstruction. This becomes necessary when a portion of the Trail must be relocated or where the design capacity of a given section of trail has been exceeded and remedial action must take place.

A trail usually can be laid so that it is resistant to heavy use, yet does not require much visible heavy construction.

However, when a question of protecting the resource arises and there's no reasonable alternative, heavy construction techniques must be used. These include bridging swampy areas, cribbing to help hold a trail on a side slope, placing stone or wood steps, and trail surface hardening with rock. These kinds of activities require enormous amounts of energy and skill and the right tools. In some cases, clubs rely heavily on paid summer trail crews that are trained and supervised by permanent staff.

Shelters

Along the trail there are nearly 200 shelters, most of which are three-sided. In most cases these were built by the clubs and are maintained as amenities for the hiker. Because of relocations and vandalism, these shelters must sometimes be torn down and new ones constructed.

The Presidential Range of the White Mountains in New Hampshire has huts instead of shelters. In these huts, professional staff of the local club provides the hikers with hot meals and some form of entertainment.

With the growing impact of Appalachian Trail use, a number of clubs have instituted shelter caretaker programs either free of charge or at a very nominal cost to the hiker. It is not unusual for a shelter designed to hold eight to ten hikers to be besieged by thirty to fifty on a popular weekend night. The caretakers have proven effective in reducing what would otherwise be very severe environmental and visual degradation.

Educational and Research Efforts

As a result of the tremendous growth in Trail use by, for the most part, urban people with few outdoor skills, clubs have become more and more involved in education programs. These run the gamut from "how to" programs that are presented to scout and church groups, to winter backpacking seminars in the mountains and roaming educational patrols that meet and chat with hikers along the Appalachian Trail. Spot educational announcements are being used on some radio stations and a number of educational pamphlets and books are written, produced, and sold by the Conference and member clubs. The Conference and clubs also produce a series of ten guidebooks that contain information necessary to take a safe and enjoyable hike on the Appalachian Trail.

In order to be more effective in their activities, some of the larger clubs have developed research units to help improve their own management programs. These research programs deal with such topics as trail erosion patterns, impact on flora and fauna, visitor use patterns, and the relative effectiveness of various educational programs.

Liaison with Private Landowners and Government Agencies

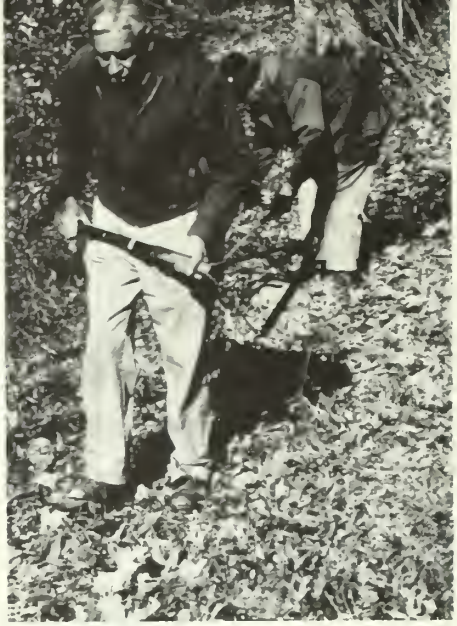
As stated earlier, slightly less than one-third of the Appalachian Trail passes through private property with permission of the landowners. To meet the needs of these landowners and insure the integrity of the Trail, each of the clubs so effected has instituted a program of ongoing landowner contacts. In some cases these contacts have been minimal. In others they have necessitated frequent trips in response to concerns and problems of the landowners generated by the high Trail use near urban areas.

In addition to these trail-focused activities, most clubs are involved in working cooperatively with at least one federal or state government agency. Such activities have included work on unit management plans with the Forest Service, meetings and committee work on state trails councils, and making presentations to county planning commissions. Since this often necessitates meetings during normal business hours when volunteers are earning their living, this liaison work increasingly is being done by Conference or club staff members.

Finally, the Conference and clubs involve themselves in local, regional, and national debates over conservation and environmental policy as it applies to the Trail. The recently passed 90 million dollar amendment to the National Trails System Act is the most notable example of this kind of activity.

Conference Organization

As can be seen from the above litany of activities, the Appalachian Trail Conference and its clubs provide a much broader range and depth of activity than that normally associated with volunteers. By one method of calculation, the amount of direct trail work alone amounts to a gift to the American public of 2 million dollars annually.



Emerson L. Harrison

Volunteers cut back excessive growth along the trail.

One difference between the Appalachian Trail Conference and the usual individual volunteer is that the Conference is a self-organized, volunteer-based, nonprofit corporation, organized to undertake a particular task. In this case, the task is the Appalachian Trail. This organization of thousands of dedicated volunteers, backed by highly trained professional staff, is in itself a remarkable national resource. Without this resource, it is likely that the Appalachian Trail would never have been built and certainly would not have lasted for over 50 years.

Advantages of Utilizing Volunteer-Based Nonprofit Organizations

With this as a background I would like to comment on the phenomenon of volunteer-based, nonprofit organizations in the outdoor recreation and management field.

In my experience, long-distance hiking trails that are situated in narrow corridors and pass through several different management jurisdictions, are ideal places to use self-organized, nonprofit organizations. In fact, recent experience has shown that it is extremely difficult to build a long-distance trail without concurrently establishing a series of grassroots organizations to cope with the work and the politics involved.

Maintaining the trail entails many hours of volunteer labor. David Startzell

It is the nonprofit organization's ability to work in the spaces between the private and public sectors that makes it so valuable. Another strength of the volunteer-based organization is its ability to work in situations where the per user costs are too high to be justified by the public sector and where it would be impossible or impractical to set fees that would allow a reasonable return on a "for-profit" investment.

Volunteer organizations keep taxpayer costs low. This can make feasible programs and opportunities that otherwise would be rejected. A side benefit of organizations such as the Appalachian Trail Conference is that they bring together people with a wide variety of experience, backgrounds, perceptions, and inclinations. People who, under other circumstances, would disagree among themselves and with the management responses of government, grow far more understanding when they must confront management situations themselves and live with their actions.

Volunteer-based, nonprofit organizations can provide continuity of purpose and results in the management and maintenance of certain resources where government agencies have a highly fluctuating management profile—due to vagaries of politics or budget. The history of the Appalachian Trail has shown that government interest in the Trail varies widely, depending upon the current budget situation and who holds the power in Washington and the various states. By relying to a large extent on income from private sources, and management by volunteers and privately funded staff, there is the continuity necessary to keep alive a highly complex and vulnerable entity.

There is an old saying that if you want something done, do it yourself. On a more positive side, when citizens care enough about a particular project to undertake to do it themselves, they provide a strong case for private and public assistance on those aspects that they cannot accomplish alone. This is a far different frame of mind than simply asking government to do whatever one wants done.

Vulnerability

While in one sense volunteer-based organizations are very strong, in another sense they are quite vulnerable. Because of their public support and appeal, they can become attractive areas for a government agency to step in and take over. When this happens, the volunteer organization generally folds up or simply turns into a pressure group. If, due to a future change in policy or budget, the agency discontinues the function, there is no organization left to pick up the pieces.

What is important to note is that it is not necessary for an agency to take over all functions in order to insure that results are in the public interest. The same results can be accomplished by cooperation and oversight. This, in fact, offers the best of both worlds: the continuity, low cost, and grassroots support of the "nonprofit" and the administration's mandate to carry out policies in the interest of the public.

Another issue of importance is the relationship between maintenance and management. On the part of professionals, there is a high propensity to look at "volunteers" as simply an unskilled labor pool. Undoubtedly this is adequate in many situations. But experience has shown that the quality of the people attracted to do a particular job depends to a large extent on the level of decision-making authority they will be given. This is even more true for organizations than for individuals. Just as in any other management situation, the challenge here is to strike a balance. To lean too far one way or the other will simply generate dissatisfaction on both sides. In volunteer organizations, people vote with their feet. When jobs become uninteresting, or if they feel they are being asked to do "busy work," volunteers just quit showing up. They seldom say much, but before long there is no organization left. This is an area that needs to be dealt with sensitively by government agencies if they are to make effective use of volunteer organizations.

A Valuable Resource

There is one other side benefit that should be mentioned—the direct support a working volunteer organization can give to the overall mission of an agency. A group that is cooperatively managing and maintaining a trail through a park becomes an effective voice in the local area. This voice can help to offset other special interest groups whose goals may conflict with the purpose of the park.

The Appalachian Trail Conference is a resource just as is the Trail itself. With the same level of care that an agency gives to a natural resource, this human resource can be preserved and enhanced. And just like protecting a natural resource, this task is not easy. But, as the history of the Trail has shown, when government works to protect and enhance a resource such as the Conference, it can expand its ability to deliver services and opportunities to the American public even in the face of severe budget and personnel limitations.

Henry W. Lautz is Executive Director of the Appalachian Trail Conference.

Minnesota's Wild and Scenic Rivers Program

by Michael Presnitz

"Name a river in Minnesota where you can walk or paddle for five miles without finding a dam, a bridge, a house, litter, or any other signs of man. There aren't many.

"Try to think of a river that hasn't changed. Try to think of one that hasn't seen the development of more houses on its banks, or the clearing of more woods along its shores. There aren't many of those streams either . . .

"Having run freely for thousands of years, many of our streams will not in our lifetimes be seen in their natural condition. Many others are now losing their wildness, threatened by residential development, recreational demands, and industrial and commercial uses.

"To 'preserve and protect' rivers that exhibit 'outstanding scenic, recreational, natural, historical, scientific, and similar values,' the legislature in 1973 passed the state Wild and Scenic Rivers Act."

Minnesota's Wild and Scenic Rivers
Department of Natural Resources

Minnesota hopes to protect at least 2,000 miles (3,200 km) of its finest river resources under its state Wild and Scenic Rivers System.

Minnesota is a state punctuated with over 12,000 lakes and 25,000 miles (40,000 km) of rivers and streams. It is a water-rich state. Yet this richness has often resulted in apathy for our water resources; and public apathy is the mother's milk which nurtures waste and misuse.

The Minnesota Wild & Scenic Rivers Act is patterned after the national system (P.L. 90-542). The State Act establishes the same tripartite classification system—wild, scenic, and recreational—and has similar classification criteria. The major differences are that the Minnesota system relies heavily on the adoption of local zoning ordinances, and the State Act does not permit the use of eminent domain (condemnation) as a means to acquire land or interests in land.

Zoning

Zoning has been a notoriously ineffective tool for protecting anything, let alone a wild and scenic river corridor. The two primary reasons for this view is that (1) zoning is traditionally administered by local units of government, which theoretically are quite vulnerable to local political and economic pressures to weaken protective ordinances; and (2) the case law or legal precedent for using zoning to protect aesthetic, historic, natural, or recreational values is vague. However, recent Supreme Court decisions have lent support to the use of zoning as a legitimate tool to protect such values.

In Minnesota, cities and counties along designated wild, scenic, and recreational rivers are required to adopt zoning ordinances. These ordinances are based on statewide standards and criteria drafted and adopted by the Minnesota Department of Natural Resources. These standards and criteria (Minn. Regs. NR 78-81) regulate such activities as mining, timber harvesting, utility routing, public facility development, and recreational use. These criteria prohibit any commercial or industrial use and include minimum development standards for permitted or conditional uses.

The unique feature of Minnesota zoning standards for designated rivers is that the Minnesota Department of Natural Resources must review *and* "certify" any variances, rezonings or inconsistent plats granted by the local units of government. In essence, the Minnesota Department of Natural Resources has veto authority over these specific local zoning decisions. This authority makes these zoning decisions less susceptible to the granting of unjustified exceptions or changes to the ordinances. Even with this additional "insulation," no zoning ordinance will be the complete solution for protecting these unique, fragile areas; it can only provide the foundation on which a comprehensive preservation effort can be built.

Land Acquisition

Purchase of both fee title and less-than-fee interests from willing sellers are authorized in the Minnesota Wild and Scenic Rivers Act. Although fee title purchase and many less-than-fee interest purchase authorities are identified in the Act, the legislation clearly intended the purchase of scenic easements to be the primary acquisition approach. The Minnesota Department of Natural Resources has followed this intent. As a general rule, we acquire fee title to only those lands needed for public use (i.e., campsites, rest areas, accesses). The scenic easement developed and used by the MDNR prohibits any construction, landscape alteration, or clearing of vegetation that would destroy the scenic or natural qualities of the land; but does not allow public use or access

Any recreational development must complement the state's river preservation goals.

Purchase of scenic easements is ideally suited to Minnesota's wild and scenic rivers since the Minnesota program emphasizes preservation, not recreation. Similarly, public use of the entire shoreline along designated rivers is neither essential nor desirable.

Recreation Management

The third means used to protect state wild and scenic rivers is recreation management.

Only recreational development and maintenance that complement our preservation goal(s) are undertaken. The MDNR does not generally develop intensive recreational use sites such as large compounds and picnic areas along these designated rivers. The sites are designed and located to: encourage self-policing by the users, reduce maintenance costs, disperse recreational use, and minimize indiscriminate use of privately-owned riparian lands.

An argument frequently used by landowners opposing designation of wild and scenic rivers (state or federal) is that the recreational use will destroy the very resource that the designation and management intends to protect. This is a legitimate concern. River corridors can be "loved to death;" one river cannot always be all things to all people.

When asked about wild and scenic river designation, many landowners think of a carnival-like atmosphere akin to Disneyworld. This is a particularly sensitive concern with Minnesota's multiple-ownership river corridors (multi-agency and private); but the problem exists in other areas as well.

Extensive and intensive recreational development is generally promoted when the managing agency owns, or proposes to own, considerable river frontage in fee title. I have found that this is largely due to (1) the public agency's response to public pressure to "do something with the land you own" and (2) the mind-set or bias that some resource managers have to *build something!* As the saying goes, "God would have done if He'd had the money."

Generally, we have found extensive recreational development to be a net liability because it: (1) increases local public opposition, (2) increases management costs, (3) stimulates intensive public use, which in turn (4) leads to the adoption of more government regulations.

In Minnesota, the DNR has the authority to regulate water surface use as a part of the recreation management of designated wild and scenic rivers. Each management plan for a designated river provides for the possible future application of such regulations. The legislation allows the control of water surface. To date such regulations have been adopted only for the Lower St. Croix. The Lower St. Croix is a state-administered component of the national system; it is jointly managed by the States of Minnesota and Wisconsin and the National Park Service.

Landowners

In Minnesota, even the long-range management goals will result in a checkerboard ownership of public and private land, with private land primarily protected through scenic easement purchases and zoning. In a very real sense, we have hundreds of "resident managers." These resident managers are our partners and are commonly referred to as landowners.

If there is one aspect of the Minnesota program that is unique, it is probably the one-to-one contact with landowners and many other residents and government officials. What successes we have had can be directly attributed to our staff's ability to communicate effectively with these people. The reverse is also true.

Direct public contact is time-consuming and costly, *but* effective. Some resource managers have said to me that they wished they could afford to do this; my reply was that we can't afford not to. This contact is particularly crucial in Minnesota since we only can buy land or scenic easements from willing sellers; there is no condemnation authority.

Our goal is to contact every landowner and unit of government along a river proposed for designation. This goal was established on the principle that if landowners help write the management plan, they'll help underwrite it. Common sense should tell us that the vast majority of people would prefer not to have an agency, any agency, affect their lives or property by the "proxy" method. Landowners not only want to be involved—they demand it.

Although real public participation is costly, the alternative is more costly in the long run. The alternative perhaps is best described by the national

Boaters paddle past remains of old stone structure on the Cannon River, currently under study for state designation.

advertisement advocating preventive car maintenance. The ad goes: "See me now or see me later." From a landowner's perspective this is precisely the warning to resource-management agencies.

Work with landowners from the beginning, or they'll see you at the public hearings when you attempt to implement the management plan. If you haven't seen them before this stage; it's virtually certain to be a confrontation. Often there is no recovery from such a confrontation—no second opportunity. Where recovery is possible, it is always less effective, more costly, and more time-consuming than contacting landowners and other interested parties in the first place.

Generally speaking, governmental agencies don't have credibility—people do. We've found successful river planning and management is a direct function of personal credibility. Personal credibility is not developed through news releases, form letters, or even phone calls. This credibility is developed through honest, sincere, face-to-face contact

Suggestions

From all of the public meetings and contacts made since the start of the program in 1973, we have had both successes and disappointments. We've made our share of errors, but we've learned quite a lot from it all. I'd like to share some ideas and suggestions learned from our experiences which may be of benefit

First, although there is no method as effective as direct, personal contact, other methods of providing information and communication also can be used. As the telephone company says: A phone call is the next best thing to being there. Then comes a personal letter. Sending only a form letter, complete with copy machine signature, is taboo. We use word processing machines so, when needed, we can send hundreds of original letters at a minimal cost.

Second, we also utilize more structured citizen participation mechanisms such as advisory councils. These are helpful, but are not sufficient in and of themselves. Selection of members can be a problem. You want people that are representative of the diversity of community interests and also respected by their peers. We make considerable effort to avoid a "stacked deck" either for or against the designation. Members are suggested by local officials, lawmakers, and others. Persons suggested fill out a questionnaire and are then selected by the Commissioner in consultation with the local officials.

Third, in the communities along rivers proposed for designation, we have had "Open Houses" where people can walk in and talk to department staff about their concerns. These are held after a recommended plan has been prepared and distributed to the public, so there is something specific for people to react to.

Fourth, we make formal presentations to the city councils, county boards, regional commissions, and other governmental entities

Fifth, we hold public meetings which are widely advertised well in advance, conveniently located, scheduled at times for public convenience, and open to everyone wishing to attend.

Finally, we hold formal public hearings requisite to designation. These hearings are held after notice has been given for at least 60 days. Public hearings are much more structured than the public meetings. Interestingly, the public hearings (one in each county along the river proposed for designation) are the only formal public participation mechanism required by the Wild and Scenic Rivers Act. The legislation, however, *suggests* that we do more than just hold the public hearings. We have.

Summary

Although wild and scenic river designation in Minnesota has been a child of controversy, it has generally been quite successful.

To date, all or portions of six rivers have been included in the State's wild and scenic rivers system: Kettle, North Fork Crow, Upper Minnesota, Mississippi, Rum, and Lower St. Croix Rivers. Several other rivers are currently under study, or will be studied, for inclusion in the state system by 1981. These rivers include: Snake, Minnesota, Crow, Cannon, Cloquet, St. Louis, Sauk, Des Moines, and Zumbro.

In addition, the Upper St. Croix was one of the "instant" rivers designated as a National Wild and Scenic River, with the passage of the Act by Congress in 1968. The Lower St. Croix was designated a state-administered component of the national system in 1974. In 1975, the Congress authorized the study of 466 miles (746 km) of the Upper Mississippi from its headwaters to Anoka and the entire Kettle River in Minnesota.

Our goal is to include at least 2,000 miles (3,200 km) of Minnesota's finest 25,000 river miles (40,000 km) under protection as a state wild and scenic river.

Michael Priesnitz has served as Assistant Commissioner for planning in the Minnesota Department of Natural Resources and as Supervisor of the Department's Rivers Section. Since writing this article, he has joined the public relations firm of Robert Goff and Associates in St. Paul, MN

All photographs from Minnesota Department of Natural Resources

Urban Waterscapes

by Tedd McCann

Alexandria, Virginia waterfront. Paul Lederer

When the first European explorers landed on the edges of the North American continent, their instincts and experiences led them to the mouths of rivers. Here, they probed farther inward, hoping to find the mythical passage through a continent they had little idea was three thousand miles (4,800 km) wide. Unaware of its immense size, they also were ignorant of its massive waterways and drainage systems which basically flowed north and south between massive mountain ranges, separated by the great basin that now constitutes our Midwest.

It was logical that most of the first colonies and early villages occupied land at river mouths or where great harbors offered protection from the ravages of stormy seas and tides. In time, these settlements became active ports which provided the necessary link to the trade routes of Europe, Asia, and Africa. They formed a lifeline through which flowed the goods, money, and human cargo that built the youthful nation.

Until well into the nineteenth century, the waterways were the prime mover of goods, people, and raw materials. Many rivers, particularly in the East, were less than perfect "avenues of commerce." Most had rapids, abrupt falls, and erratic courses. Because of these conditions, scores of individuals and groups formed canal companies to build linkages between the larger navigable waterways. Thus was born what is called today, the "Canal Era."

The canals opened up the backcountry in the North and Mid-Atlantic states. Canals also proliferated at the prairie's edge in Ohio, Indiana, Illinois, and Michigan.

However short-lived, the era of the canal did provide a necessary link in America's growth. The Erie Canal helped make New York City into the nation's dominant urban complex. The Illinois Canal launched Chicago's spectacular urban growth in the mid-nineteenth century, while the Ohio Canal quickly gave Cleveland an advantage over its sister city to the south, Cincinnati, on the Ohio River. Systems of canals gave New England a tremendous advantage as the nation's first manufacturing center using water for power. The emergence of the railroads brought the Canal Era to an early close.

In the last half of the nineteenth century, the development of urban America, and the preeminence of certain cities over others largely hinged on their combination of transportation systems. Those places which had the railroad combined with port or river access became dominant, Chicago being the best example. Similarly, Philadelphia, Boston, Baltimore, Cleveland, Detroit, St. Louis, and Milwaukee, maintained their growth patterns from their earliest beginnings until today.

Early Waterfronts Bustle

Urban waterfronts, particularly those in seaport cities, always have enjoyed lively and distinct characteristics which mirror the society and the times in which they exist. The early cities that developed from the water's edge—like New York, Boston, Baltimore, Washington, Norfolk, and Charlestown—had nearly identical characteristics. There were great wooden docks behind which were warehouses, bars, restaurants, hotels, numerous shops, and offices of those engaged in commerce. Nearby were usually found small industries and plants that turned out finished goods from the raw materials unloaded at adjacent dock facilities. Businesses catered to the townspeople, the traders, and the numerous seamen from far-off lands. Nearby were places full of life, turmoil, legal and illegal activities. Churches, bawdy houses, bars, and Christian "missions" existed, frequently side by side. Situated here were the first newspapers, telegraph offices, dealers in exotic goods, drugs, and, often, smuggled and pirated merchandise. In colonial America, a great percentage of trade was in illegal goods that avoided various tariffs and taxes, by England and other European countries.

In short, the waterfronts *were* the center of things, and human muscle moved and transferred prodigious mounds of goods, in and out of ship's holds, warehouses, and storage yards. As the steamship took over from the packet, sloop, and sailing ship, the transfer of goods became more mechanical and structured. Improvements in communications and distribution systems spread out the old facilities throughout the city. The typical systems at waterfronts, which had existed for three or four hundred years, slowly disappeared.

During the fifty years between the end of the Civil War and the outbreak of World War I, 200,000 miles (320,000 km) of track linked the once-forbidding 3,000 mile (4,800 km) wide continent. Railroad became the prime mover of people and goods. In a state like Ohio, as an example, the matrix of rail lines linked nearly every town in the state with a population of 500 or more. Vast rail yards soon exempted all other activity at seaport waterfronts, in the Great Lakes industrial "heartland," and the major ports along the Mississippi, Ohio, and Missouri Rivers.

Water Pollution Accompanies Urban Growth

The growing and severe pollution of most urban waterways produced a double impact on the planners and park builders. It produced a philosophy still widely prevalent today, to "put the parks elsewhere and plan the future *away* from the river and harbor." The legacy of that philosophy is perhaps best illustrated by Robert Moses in New York; for Moses, it meant the landfill of marshes and estuaries for highways and the creation of parks located in long parallel strips abutting the concrete avenues out of the city.

Urban rivers and waterfronts also suffered the disastrous results of highways, which invariably line the rivers and harbors of every city in the United States. One spokesman, Peter Blake, had this comment: "In the United States, the highway planner has succeeded in destroying almost every city in which he has been active . . . almost every civilized city in Western Europe has a waterfront dedicated to its inhabitants. To list only a few, Copenhagen, Stockholm, London, Paris, Zurich, Florence, and Naples have waterfronts that are a delight to the eye and a relief on hot summer days. American cities have six- or twelve-lane highways instead."

The river of history, legend, and importance, the wellspring of urban society, and the interests of civilization itself, in the twentieth-century United States had become an ignored, hopelessly polluted barrier to future civic "improvements" and development. The usually slow (but sometimes accelerated) degrading of river and harbor water quality was ignored except for a handful of commercial and sport fishermen or an occasional bather. Yet, the old sandy Tidal Basin beach in Washington, DC, in less than forty years, became inhospitable except to a few eels and catfish. Similarly, the Hudson, Detroit, and Chicago Rivers became open, smelly sewers. Barge traffic, oil spills, industrial wastes, and dumping finished off what were once the fishable and swimmable waters that helped create the nation's major cities.

In Cleveland, the final holocaust was the river itself. Coated with industrial oils, the Cuyahoga actually caught fire and burned—marking the absolute low point for America's urban waterways. The Cuyahoga River became a symbol of all that had gone wrong.

In an otherwise depressing inventory of ills, a few exceptions were in evidence. The extensive landscaping and park system at the Chicago waterfront in the 1930s was and still is a splendid civic achievement. San Antonio's river park and walkways are an internationally acclaimed success. In Washington, DC, decades of federal control and money had contained development to certain areas and landscaped vast reaches of the middle Potomac into interlocking park systems—a process which still continues. The landmark National Environmental Policy Act of 1969 and the Federal Water Pollution Control Act of 1972 both produced significant improvements in the urban environment.

A Budding Renaissance of Urban Waterfronts

At this time, no one is yet calling the new urban waterfronts a "renaissance," but the seeds obviously are there. Overall, the most interesting and common characteristic of riverfront and waterfront renewal in this country is its mix of structure, uses, and resources. Curiously, if not surprisingly, human amenities, such as parks, are often the central design thesis. Hence, great attention is given to public furniture, night lighting, fountains, plantings, walkways, and *direct* pedestrian water access. No longer fenced out, people can actually walk to the water's edge without colliding into trains, trucks, or automobiles.

Current waterfront renewal has several other heartening aspects. Many projects are funded entirely with private money and resources. When federal dollars are in evidence, they are usually financing specific aspects of overall plans. In the absence of any single major federal program by the Departments of Commerce or Housing and Urban Development or by the Environmental Protection Agency, a new breed of planners, administrators, and designers has devised complex, ingenious packages which draw on *all* kinds of fiscal and human resources

Paul Friedburg is one of these people. His project, on the Harlem River in New York City, is one of the most massive underway in the United States. His site—a mere flat place on the east side of the river, amidst decaying rail yards, warehouses, and obsolete buildings. His problem—to involve over two dozen federal, state, and municipal agencies in the task. His goal—to create the first state park in New York City.

By any reasonable frame of reference and history, Friedburg's chances were almost *nil*. Yet, with only a few major buildings completed, but with plazas, fountains, and urban parkscape in place, thousands of people actually stand in line to enjoy the place.

In Cincinnati, Detroit, Minneapolis, St. Louis, Pittsburgh, Chicago, and parts of Philadelphia, one finds the same phenomena of rebirth and excitement—fully leased buildings, daytime crowds, and nighttime glamour.

Some American urban waterfronts finally are achieving a maturity. They are capturing that elusive essence that makes romantics of us all as we walk along the Seine in Paris or watch gondoliers suavely "pole" by in a Venetian canal.

Linking Downtown to the Waterfront

In many cities, especially old seaports, so much landfilling and bulkheading has occurred since the early twentieth century, that the shorelines gradually were moved farther away from the central business section. The natural silting of urban rivers and destruction of old docking facilities has meant that, in places like Washington, Baltimore, Boston, and Philadelphia, the edge of the harbor or river has moved a considerable distance from the present downtown's main business center.

A common problem of contemporary urban planners is to somehow link these existing downtowns to the waterfronts, as Cincinnati and St. Louis have done, or to try and establish a whole new complex that exists virtually on its own, as Paul Friedburg has accomplished in New York.

San Antonio, Texas River Park. San Antonio Park & Recreation Dept

For the past decade, San Francisco's spectacular waterfront has been the most influential and copied waterfront restoration project in the United States. Today, Fisherman's Wharf/Ghiradelli Square is the second largest tourist attraction in California (Disneyland being the first).

Restoration and Adaptive Use Breathe New Life into Waterfront Buildings

The highly successful adaptive use of old industrial buildings as lively commercial centers has been echoed in all parts of the United States: Canal Square and the Foundry on Washington, DC's Georgetown Waterfront; Market Square in Annapolis, Maryland; Newburyport on the Merrimac River in Massachusetts; practically the whole revitalized city of Lowell, Massachusetts; Portland, Oregon; Cincinnati's "Hills" section; and Kansas City's massive River Quay, where historic structures linking the Missouri River to the present central business area are being readapted for modern uses.

In New York City, while other larger projects get the media attention, the South Street Seaport has quietly been moving towards completion. South Street represents the oldest and most historic remaining piece of eighteenth-century waterfront in Manhattan's Battery Park area.

Baltimore's Inner Harbor Redevelopment is an ambitious 20-year plan to renew 240 acres (96 ha) surrounding the historic harbor where the city originated. Only about one-fourth of its cost will be federal money; the rest will be private and institutional investments.

As a movement, historical preservation, until recent history, was centered largely in the North Atlantic and Mid-Atlantic regions. Lately, however, the fever has spread with a vengeance to river cities like Louisville, Kentucky. Here, some 40 local organizations have joined Louisville's Preservation Alliance. In the short space of three years, 48 square blocks of the city have been put into three preservation districts and eight individual landmarks have been designated and saved. Louisville is also the site of some of the most ambitious waterfront park and commercial developments in the country.

Like Louisville, other old river towns, which have always had the seeds for rebirth, are at last realizing their riches. Memphis, Cincinnati, Pittsburgh, Harrisburg, Davenport, Galena, and Omaha all have massive projects in the works.

Types of Urban Riverscape Redevelopment

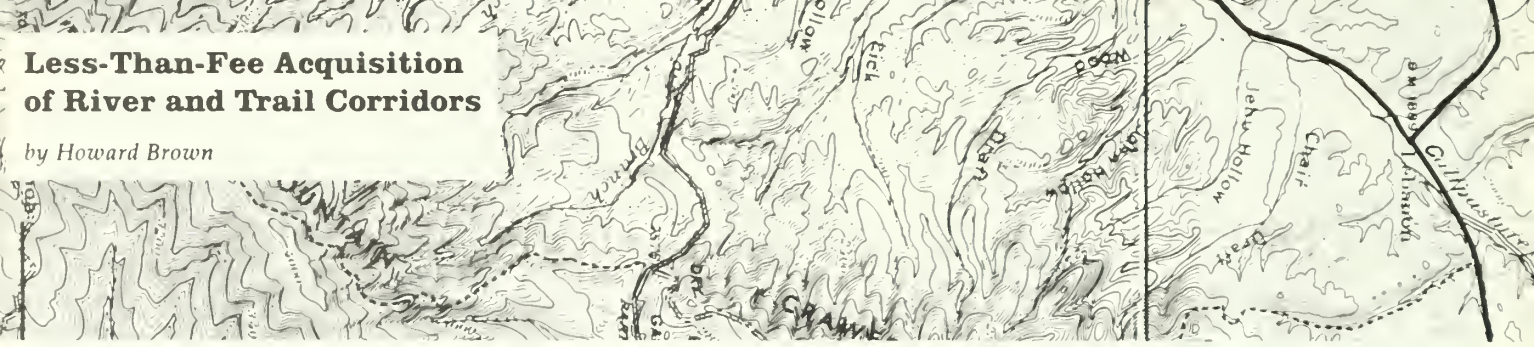
Urban riverscape redevelopment, at present, is characterized by two broad kinds of activities. The first are projects conceived and developed as *new* construction, whose components include a mixture of retail, office, and residential uses, and often, civic or governmental development. In most instances, these projects utilize underdeveloped land. The second broad category of activity tends to be more preservation-oriented, geared to saving old structures, adapting and modifying them into useful commercial and residential space. New construction in these projects tends to follow the scale, texture, and materials of its restored neighbors. In both instances—unlike the mentality of the 1950s and '60s—the contemporary design is one of *diversity* of uses and functions. There is far greater stress on "people" needs in combination with recreational and leisure-time facilities.

Hopefully, this trend will continue. As urban waterways become cleaner and more usable for recreation, the numbers as well as size of urban waterfront projects, including river park and recreation areas, can only proliferate throughout the country.

Tedd McCann is an Urban Planner with the National Park Service's Office of Planning and Development.

Less-Than-Fee Acquisition of River and Trail Corridors

by Howard Brown



Times and focuses are changing with respect to preserving natural areas. Due to many factors—among them budgetary, political, and management constraints—the era of establishing large new parks is ending. Considerable discussion now centers on alternative preservation means—a wide spectrum of protective measures that require lower cost and less intensive federal presence. These measures include increased reliance on state and local land-use regulation; consistency restrictions upon federal activities and assistance; and, most of all, acquisition of rights to real estate less than the fee simple.

Less-than-fee acquisition is particularly relevant to the protection and establishment of river and trail systems, whether they be federal, state, regional, or private. Indeed the two main federal programs—the National Trails System and the National Wild and Scenic Rivers System—virtually dictate use of less-than-fee acquisition by statute and by nature.

Wild and scenic river designation does two things to protect a river: (1) it protects the river itself, principally from water resource projects, and (2) it preserves the landscape through which the river flows (the riverscape).

There are two basic ways to control land use—through zoning and purchase. Zoning is not an available tool for the federal government. Federally administered wild and scenic rivers, for example, must rely upon land acquisition of one sort or another to control use of private lands in order to preserve riverscapes.

This creates a rather ironic situation. The typical river preservation fight is against a dam or other project which threatens to destroy the river. In most cases, the people who fight hardest against the dams are those whose property would be taken away from them because it would be inundated by the reservoir. Now, for a change, the federal government comes in to preserve a river rather than to destroy it. And how does it do this? By buying people's land away from them!

The situation need not be as bad as it seems, however—if less-than-fee acquisition methods are used.

Landowner Safeguards Provided in Federal Act

The National Wild and Scenic Rivers Act strongly limits the authority of the federal government to purchase lands or interests therein. Nearly two of the Act's twelve pages are devoted to land acquisition restrictions.

The clear intent of the Act is to minimize intrusions upon landowners by limiting the amount of land acquisition, particularly in fee, and by limiting the use of condemnation. Yet the most common reason that wild and scenic river proposals have run into trouble is that landowners have not understood the Act's safeguards and/or that agency personnel have not wanted to comply with the spirit of those restrictions.

Acquisition Limitations

First of all, the boundaries for the river corridor within which any acquisition at all can be made are limited to a maximum average of 320 acres per mile (128 ha per 1.6 km) on both sides of the river. That translates to roughly one-quarter mile (.4 km) back from each bank.

Conceptually, the idea of the river corridor is to include only those lands directly visible from the river and those lands which immediately impact upon it. The 320 acre (128 ha) average is a maximum; there is no reason the corridor could not be even smaller. The program does not intend to control the watershed or provide parklands on a major scope.

Within the designated corridor, a maximum average of 100 acres per mile (40 ha per 1.6 km) can be acquired in fee simple. Again, this is a maximum. The conceptual background here is that outright acquisition is only necessary in those few places where there will be public-use facilities. Scenic and/or access easements should be adequate for the majority of the corridor. Emphasis is placed on scenic easements, but any sort of less-than-fee device can be used

Where land is purchased in fee, the Wild and Scenic Rivers Act requires that landowners living on their property be allowed the option of retaining a life tenancy. The price is reduced accordingly, but the property transfer does not take place until the landowner's death or a set period of up to 25 years.

Eminent Domain

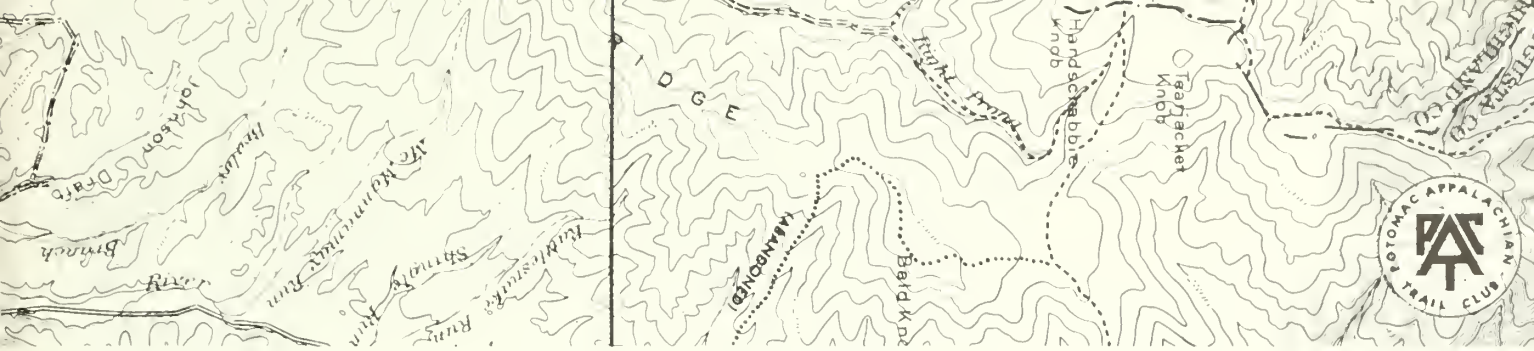
If more than 50 percent of the land within a designated river corridor is publicly owned—or once that point is reached—condemnation cannot be used for the purchase of land in fee simple. (Eminent domain can still be used for the purchase of scenic or access easements, however.)

The Act also prohibits use of eminent domain within an incorporated city that has adequate zoning to protect the river; and Indian or local government lands cannot be acquired if they are being managed in a compatible fashion.

Concept of Rivers and Trails Programs

The fundamental concept of rivers and trails programs is that a minimal amount of land is sufficient to preserve these crucial elements of the natural landscape and world of outdoor recreational opportunities. Each river segment or stretch of trail need not compare with the Grand Canyon or Yellowstone; it is significant as part of the *system*. Little need exists for sharp delineation between public and private land and virtually no need for facilities.

Preservation of the resource is the central objective—preservation of its basic character as it presently exists. These factors minimize costs and intrusions upon landowners, and maximize the number of rivers and trails established by utilizing less-than-fee acquisition methods. As explained above, federal river and trail laws require use of less-than-fee acquisition and restraint in use of condemnation. Furthermore, the political popularity of such programs generally and the feasibility of obtaining designations for individual rivers and trail routes demand it.



Just What Is Fee Simple? What Are Scenic Easements?

When you buy a piece of property, you are not paying for so many cubic yards (m^3) of dirt. Rather, you are paying for certain legal rights to the use of that property, such as the right to farm it, build a house upon it, or cut down its trees. When you purchase this complete bundle of legal rights, you are purchasing in fee simple.

Actually, even fee simple purchase will not get you all the rights; certain rights remain with the government and others, such as water and mineral rights, often are determined separately.

The various rights to the use of property can be separated and sold individually. An easement is the purchase of one or more rights from the landowner or holder of the majority of that bundle of rights. After selling an easement, the landowner continues to own and enjoy all of the remaining rights to that land.

Most people are familiar with the concept of a positive easement. This conveys to the holder some use of the property, such as a boat launch ramp, a railroad or utility crossing. Negative easements are less familiar. Rather than conveying rights that are desired to be utilized, negative easements convey rights that are desired in order to prevent the landowner from exercising them.

A scenic easement is such a negative easement. The government, land trust, or whomever, purchases various development rights which, if exercised, could adversely impact the natural values of the adjacent river or trail or the open space values of the land itself. Thus the landowner gives up the right to subdivide for housing, erect billboards, cut timber, etc., but continues to own the land and use it, generally however it has been used in the past. The landowner is fully compensated for the rights he gives up and can sell or pass on to heirs his remaining rights. Unless a positive access easement is also sold, the landowner still can restrict or ban the public from his land.

Facts Rebut Main Complaints Against Scenic Easements

The principal complaints against scenic easements have been: (1) their high cost vis-a-vis fee simple, (2) difficulty in enforcing their restrictions, and (3) inability to manage the lands—pick up trash, provide police coverage, etc. This last point can be resolved simply by writing authority for necessary management measures right into the easement agreement.

Generally, scenic easements have relatively high costs only where large potential for development exists, particularly near urban areas. High costs are not the usual case, however. The same factors that advocate high-quality preservation rivers also make their streamside lands difficult to develop: steep slopes, wetlands, flood hazards, inaccessibility from main roads.

In instances where the costs of scenic easements do approach the costs of fee simple purchase, alternative less-than-fee devices, such as purchase and lease or sale back (further described below), often can be utilized advantageously. These are the same situations where easements frequently can be obtained by donation because of the tax advantages (both for income tax deductions and for decreased real estate taxes).

Regarding the difficulty of enforcing easement terms, there may not be enough experience to draw conclusions. Yet, The Nature Conservancy holds easements on more than 85,000 acres (34,000 ha) in 20 states (mostly donated), and has not had any problems with enforcement. Private land trusts, generally, have made very good use of scenic easements. As long as there are personnel in the area, enforcement should not be too big a problem.

Other Options

Easements are by no means the only less-than-fee acquisition option. A variety of devices exist which can offer particular advantages to particular situations. A major advantage to most less-than-fee devices is that the landowner gets liquid cash while still being able to live on or use his property, and the public is served by preserving the property from adverse development.

Property can be purchased while retaining for the former owner the right to live on it for the rest of his life or a set number of years. Such life-tenancy is a mandatory option under the Wild and Scenic Rivers Act.

Property also can be purchased, then turned around and leased or sold back to the original owner or another, with appropriate restrictive covenants in the latter transfer to protect the public interest. Such arrangements can greatly reduce long-term costs. While this authority undoubtedly was available all along, the National Parks and Recreation Act of 1978 specifically authorizes use of purchase and lease back in the Wild and Scenic Rivers program.

Purchases can be made in installments or combined with donations of other tracts to provide tax advantages. Leases can be made virtually permanent and may be the most suitable device for certain situations.

A whole catalog of conditions can be placed upon donations—and in some cases purchases—which can protect the property's natural and open space values. These include gifts in trust, conditional or limited transfers, reverter clauses, restrictive covenants, and equitable servitude.

So, with the advice of a real estate lawyer and a little imagination, less-than-fee acquisition often can provide an answer to make everyone happy while preserving our rivers and natural areas. And there is a certain beauty and justice in preserving natural areas by utilizing real estate devices and tax considerations that so often contribute to their destruction.

Howard Brown is Director of the American Rivers Conservation Council.

Managing Visitor Use On Whitewater Rivers

by David W. Lime

Outfitters often stop above rapids to have passengers look them over and to "psyche them up" before the run. David Lime

In the past five to ten years, recreational activity on rivers has increased greatly. Because of this rapid growth, river managers must make plans that will protect both the unique natural resources of rivers and the quality of experience for people who visit them.

Often, the solution to perceived unacceptable use of rivers has been framed in an either-or context. Either use is allowed to continue uncontrolled or stringent regulations are imposed. A frequently used regulation is to limit the number of people, parties, or watercraft permitted to launch from a given access point each day.

This article explores some of the unique physical and social conditions associated with recreation on whitewater rivers, particularly rivers in the western United States. Following each condition are suggestions on how planners and managers might capitalize on these attributes to enhance opportunities available to the recreating public. Particular attention is given to identifying management techniques that are more subtle than outright restricting of the number of people or watercraft. Although this article focuses on western whitewater rivers, many of the concepts introduced are applicable in the East, South, and Midwest.

PHYSICAL ATTRIBUTES

Many Whitewater Rivers Are Entrenched in Canyons with Frequent Meanders

Although these conditions can impose constraints upon the recreation experience, they also offer opportunities to the manager. Both conditions limit the line of sight from the water. Therefore, the experience of the user may not be focused on the total canyon landscape, but strongly oriented to the water and the nearby canyon walls. If we assume a more varied canyon experience is a useful management objective and is desired by many visitors, how might management strategies respond to this demand?

The provision of side trips is one response—both land and water-based excursions. The exploration of smooth "backwater" environments between rapids could be one type of side trip. Frequent stops at points of flora, fauna, archaeological, and geological interest could expand the perception and enjoyment of a canyon landscape.

River running trips could be designed to devote a substantial amount of time to the adjacent land environment. Hiking, horseback riding, and jeep riding could be added to the water mode. Terrestrial travel could be built into the river run at various times such as at the beginning or conclusion of the river run, or as side excursions during the trip.

Although the terrestrial experience seems essential to a more complete perspective of a canyon landscape, aerial inspection of it may be even more significant and an added attraction for many visitors. Air tours to inspect the regional landscape, the water route, and attractions of the canyon country (waterfalls, lakes, glaciers, mountains, arches, etc.) could greatly enhance the experience. The scheduling of the flight before or after the river run is probably critical and should be studied. The use of airplanes or helicopters during the river run also could be considered in some places. Helicopters can overcome the constraints of canyonland terrain and can provide unique visual perspectives. But, of course, their presence could conflict with on-river users, and the impact of such activities should be evaluated before receiving widespread endorsement.

The advantages of better utilizing the terrestrial environment and providing additional travel modes within a recreation system are many. The main benefit is that a wider range of recreation opportunities can be provided to meet the mix of visitors' desires. Also, the carrying capacity of the system can be increased. Because use can be spread out on the total landscape, congestion can be reduced. In combination with other management techniques, people-to-people contacts would be reduced. These strategies use a limited resource more efficiently because fewer river miles can be traveled per trip. Length of stay also can be increased within a given river distance.

Whitewater Creates A Unidirectional and Linear Pattern of Travel

This physical attribute of whitewater resources is so obvious that it is often ignored in management considerations. It creates a unique recreational travel pattern because users travel in the same direction within a ribbon of space, and generally, at about the same speed.

This travel pattern is significant for both the user and the manager. In other recreational settings, congestion problems are often a function of encounters of parties traveling in opposite directions. On whitewater, encounters generally occur only when a party is overtaken on the water or passed at a campsite or daytime stop. (Rivers with jet boats are an exception, of course.) Thus, the problem of congestion is somewhat simplified.

The one-way traffic flow makes the potential for scheduling departure and arrival times at campsites, picnic stops, etc., easier than the scheduling of trips on land or open water. Such scheduling, although regulative, could be determined through computer simulation. For example, commercial outfitters could

On outfitted trips especially, some people might prefer to camp away from the others and meet the remainder of the group the next morning. David Lime

receive launch times, times to run rapids, times to locate and break camps, campsite locations, and exit times. If scheduling were coordinated between the agency and outfitters, clients could be unaware that their experiences were being so strongly regulated.

By careful scheduling, managers could provide several recreation opportunities on the same river. Different encounter or congestion schedules could be assigned. For example, small non-motorized parties might be scheduled for different days or weeks than large motorized groups. Also, scheduling could produce variations in encounter rates, such as permitting more departures per day for small, non-motorized groups than for large, motorized parties.

Rapids Are Separated by Fairly Long Stretches of Smooth Water

Therefore, river running may actually constitute two different and distinct types of water-based opportunity—whitewater and smooth water. Some basic questions need to be answered. To what extent are river trips being "sold" as an opportunity to experience whitewater with a focus on the rapids and a neglect of the often greater length of smooth water? Is there a significant demand for smooth water? Is there a demand for a combination of both smooth water and whitewater? The options available to managers and outfitters will vary depending upon whether both rapids and smooth water are important to the river runner.

If *smooth water* is determined to be highly important, then the resources between rapids should be more fully utilized. Exploration of the terrestrial environment along the river and on-water activities, such as swimming, fishing, sunbathing, and relaxing, should be encouraged.

If, on the other hand, *rapids* are the principal resource that recreationists "purchase," it may be justifiable to use motors to quickly overcome the distance between rapids. The question of whether rapids could be created or altered to become more thrilling and dangerous also should be addressed.

What techniques, other than physical manipulation of the resource, are there to increase the excitement and thrill of experiencing rapids? Although unacceptable to many users and managers alike, upstream tows on some rivers, similar to ski lifts, would permit river runners to have their boat pulled up-stream for multiple runs of popular rapids. Time could be spent looking over the rapid before the run to prolong the excitement and "psyche up" the participants. Guides could discuss the danger of a particular rapid before the run. Lunch stops could be scheduled above a rapid. Guides could schedule their stops at rapids to reduce, or even increase, congestion. For example, scheduling could insure that parties "bunch up" at rapids, especially the larger, more exciting ones, if watching others enhances the pleasure.

Entry and Exit Are Severely Restricted on Many Rivers

This attribute of whitewater recreation occurs frequently because rivers are entrenched in canyons and/or the access roads are poor.

Although the limited entry-exit condition is not easily modified, it is possible to "create" entry and access points to disperse use. Certain accesses can be upgraded to accommodate four-wheel drive vehicles, but more subtle and unconventional opportunities exist. Travel by foot, horse, helicopter, or airplane to waiting boats could alter the experience dramatically. If the river run does not begin and end at the automobile, a more varied and potentially spectacular canyon experience could be provided. Certain spatial situations may enable a party to begin a river run as another party concludes one.

Fluctuation in Water Flow

Flow fluctuation during the river running season is an important attribute of many whitewater resources, and its effect cannot easily be summarized. Fluctuation of flow is both natural and dam-regulated. In many river systems, water flow peaks in late spring or early summer, then declines throughout the remainder of the summer and fall.

On regulated river sections, the decline is often moderated by constant or periodic releases of water.

In many situations, the boating season could be extended by further manipulating draw-down on reservoirs. However, whether reclamation and power policy and the present water system are amenable to such dramatic changes in regulation needs to be determined. Recreation management efforts may have to resort to more subtle and indirect means of extending use seasons.

River runners sometimes overestimate the amount of water needed for a satisfactory river trip. Many trips do not require a peak water flow. Perhaps the season could be extended if some trips were conducted during low-flow periods and when water conditions were not hazardous. This might appeal to some people who would be satisfied with trips that emphasize smooth water, excursions to side canyons, fishing, swimming, beachcombing, and other attractions in addition to rapids.

An airplane flight over the river before or after the trip would greatly enhance the experience for many people. U.S. Forest Service

Physical Camping Space Is Unlimited Along Some Rivers

This is true during both high and low water seasons in many river areas managed by public agencies. Thus, in these locations, the availability of campsites may not limit carrying capacity. Rather than space, resource constraints such as vegetation for shade, wildlife habitat, firewood, drainage, streambank hazards, disposal of human waste, and soil compaction will dictate carrying capacity and location of campsites.

Instead of the direct limitation of user numbers, overuse generally can be controlled by rotating use, limiting length of stay and party size, confining camping to designated sites only, restricting open fires, and other more subtle techniques. During periods of high use, managers could schedule departures from entry points to prevent congestion at the end of the day's travel. Sites could also be assigned and rotated among outfitters during high-use periods.

The availability of fairly unlimited camping space offers the manager the opportunity to satisfy a diversity of camper preferences. For example, wilderness purists may desire undeveloped camping areas out of sight and sound of one another. For such people, wilderness campsites out of sight of the main stream channel should be considered.

SOCIAL ATTRIBUTES

Certain social aspects of river running result from the technological adaptations to travel on whitewater. The technology of whitewater travel has a strong influence upon behavior, and strongly influences the social experience of river running. Whitewater virtually demands that unique, safe, and expensive craft be used in navigation, and navigational experience is essential. An abundance of accessory paraphernalia—such as chairs, tables, sports equipment, canned beverages, fire grills, and large quantities and varieties of refrigerated foods—is often taken on river trips. All these things influence the user's experience in various ways.

Most People Run a Whitewater River with a Commercial Outfitter Under Permit from a Public Agency

Although the number of parties outfitting themselves and traveling alone is rapidly increasing, the prevalence of outfitted use on whitewater rivers is unique compared to other public recreation land. The presence of an outfitter is thus a significant ingredient of the whitewater user's experience. Outfitter use also poses important consequences for river managers.

The outfitter can serve an important role in attaining the desired objectives of management. In fact, it is doubtful that management objectives related to use patterns or trip types can be achieved without the cooperation of the outfitter. For example, if scheduling of departures or daytime stops is adopted to reduce congestion, disperse use, or separate incompatible uses, close coordination and support will be required.

If management wants to provide a variety of opportunities, alternative rivers or segments of rivers outside the jurisdiction of the manager must be considered. Because the outfitter's territory often spans several jurisdictions, his cooperation is essential to accomplishing this objective.

The coordination between management and outfitters in controlling or modifying use could be virtually unnoticed by most outfitted river users. These practices are less obtrusive to recreationists than are direct regulatory controls that interfere with their perceived freedom of choice.

Boatmen and Guides Can Influence the Nature of the Visitor Experience on Outfitted Trips

Guides can make the experience of the user more varied, accentuate certain features and conditions, avoid or increase congestion, and educate visitors about the environment. The relationship between manager and outfitter, therefore, indirectly influences the visitor experience.

The guide's control over the experience of visitors is so pervasive that managers should consider conducting a guide's school, or testing and licensing all boatmen before authorizing them to guide on the river. Guides could learn about specific management objectives, the types of experiences sought by visitors, visitor behavior, and safety. Techniques to unobtrusively manage a trip while providing optimum satisfaction and benefits for clients could be emphasized and taught. Conversely, experienced boatmen and guides probably could teach the managers a great deal about some salient aspects of river recreation that could aid the overall management of the river.

Outfitted Parties Typically are Large and Travel in Several Boats

Many river parties travel in two or three boats; eight to twenty people may occupy a boat depending on its size. Thus, party size is in the range of 16 to 60 people. The opportunity for solitude generally is low; the opportunity for socializing, high. This situation can breed conflict of purposes and values. Some clients may feel crowded while others may perceive congestion as an asset to the experience; the desire for socializing may take precedence over observing nature, for example.

Interactions of large, multi-boat parties need to be thoroughly explored. Do visitors prefer riding in the lead boat rather than the second or third boat? Does riding forward in a lead boat make rapids more exciting? Does camping in a large group enhance the experience? Do some people prefer to camp by themselves, away from the main group? Are experiences influenced by the timing (and spacing) of boats through rapids.

If the feeling of "group largeness" detracts from the experience, how might it be reduced? Management and outfitters should consider a variety of strategies. Boats might travel separately, out of sight and sound of one another and meet for common stops. This would impart the feeling of being in the lead boat. Boats could also travel separately and never meet until the campsite is reached. Off-river side trips not manageable with a large group would then be possible. The chance to tell tales of separate adventures around the evening campfire should not be underestimated.

While on the water, ways should be found to ensure that anticipated high points are realized and diversity is imparted to the experience. The frequent repositioning of people in a large boat provides variety. Movement among boats also may be important. All passengers could be given the opportunity to ride the lead boat and to ride forward in the lead boat. And, visitors should be encouraged to travel with the different guides.

River running trips could be designed to permit more time for exploring the adjacent land environment. NPS

Alleviating Campsite Congestion

At the campsite, a main camp for cooking and a campfire is often set up with several distinct sleeping areas. Variations to this pattern should be examined. Families or groups of friends might want to make separate camps. Mealtimes could be staggered so that part of the party is eating or doing chores while the remainder is hiking, exploring, swimming, or relaxing. Congestion at the main camp could be reduced by assigning chores to all people, including the children. Collecting firewood and drinking water, and prizes for picking up litter are examples.

The main camp is part of the river running tradition; but, if the cost of congestion at the central camp is too great, additional styles should be considered. Outfitters could separate the river transportation and river camping experiences. Partial outfitting could be offered whereby clients purchase river transportation and bring their own food, camping equipment, etc. At the end of the day's run, such clients could go off on their own and meet the group the following morning at a specified time and place. On some river trips, outfitters could increase opportunities for socializing by encouraging more group activities such as swimming, fishing and cooking contests, and songfests, and more time spent in camp eating, reading, relaxing, and visiting.

CONCLUSIONS

In many respects, the whitewater experience is a function of unique physical conditions and a distinct style of travel. The existing pattern of visitor use and user regulations on many rivers seemingly ignores many of these implications. Many opportunities exist for enhancing user opportunities with subtle, nonregulatory schemes, a few of which have been presented here. If we are to avail ourselves of these opportunities, researchers must thoroughly investigate the synthesis of user, river environment, outfitter, and watercraft. In turn, river administrators must become more creative and innovative in planning and managing. If they are willing to depart from tradition, many present and potential problems can be alleviated.

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A Partnership Approach to Protecting and Managing A River

by Gerald L. Stokes

The Blackfoot River illustrates what local citizens and organizations can do, with government help, to preserve and manage their rivers. Ellen Worth Stokes

Today's recreation planners and managers face a dilemma—a growing demand for recreation in a period of decreasing resources, increasing conflicts between public and private purposes, and public skepticism about the role and cost of government. Nowhere is the dilemma more prevalent than among those involved in protecting the recreation and scenic amenities of America's waterways. If recreation professionals are to adequately assist in conserving riverine resources, they must develop approaches that are innovative, effective, fiscally efficient, and politically acceptable.

Assistant Secretary of the Interior Robert L. Herbst, in his remarks to the Symposium on National Park Service Study Process for Proposed Areas, on September 11, 1978, challenged the symposium participants to seek a creative partnership among federal, state, and local government and the private sector in solving resource problems. He called for planning approaches that do not presuppose answers and that develop solutions on a case-by-case basis. If the Assistant Secretary's challenge is to be met, and partnership approaches prove to be viable in conserving our rivers and other valuable resources, professionals must become adept at operating in grassroots environments, where all those concerned share in developing and implementing conservation programs.

The Blackfoot River (Montana) Conservation and Recreation Management Program epitomizes the partnership approach and the role of the public agency that seem to be required by the times. The "Blackfoot approach" is a locally led and motivated cooperative effort to conserve and manage a predominantly privately owned river corridor through an open-ended, informal planning process with the assistance of government and private agencies.

History of the Blackfoot Program

The Blackfoot River in western Montana has long been recognized for its recreation and aesthetic values. In 1970, in response to the Congressional mandate of the National Wild and Scenic Rivers Act, the Secretaries of the Interior and Agriculture listed the Blackfoot among the nation's rivers to be assessed for potential as components of the national system. Congress took no action on the Blackfoot at that time, and in 1974, the Blackfoot was again recommended to Congress for study. However, in late 1975, the Secretary of the Interior asked Congress to delete the Blackfoot from the Department's list of rivers recommended for study because local "private actions are underway to protect portions of the Blackfoot River." This reference was to efforts being conducted in Missoula County, Montana, by a local ad hoc citizens' group operating under the auspices of the county commissioners.

Concurrent with the growing national interest, local concerns increased regarding the future of the river. During the late 1960s and early 1970s, Blackfoot landowners and other local citizens became increasingly alarmed at the degradation of the scenic and recreation values of other area rivers. Subdivisions and second-home developments appeared along nearby rivers. In light of the property tax ramifications of these pressures, incompatible development on the Blackfoot seemed imminent. In addition, public recreation use of the river was increasing exponentially. Since the lands in the river corridor are mostly in private ownership, the growing recreation pressure posed severe management problems for corporate and individual owners—particularly the ranchers. Consequently, the landowners and concerned citizens began exploring ways to protect the corridor from commercial, residential, and recreation overdevelopment and to provide responsible management of public use.

Although the National Wild and Scenic Rivers System could have been used to protect the area, many local people feared the federal or state government dictates that wild and scenic river designation might bring. Landowners were

Restrictions along the Blackfoot generally are few and imposed mainly against ecologically incompatible uses. Ellen Worth Stokes

concerned, too, that national or state designation would publicize the river and increase public use problems even more. Thus, some middle-of-the-road approach was needed.

A voluntary conservation easement program to control development had considerable appeal, but if this approach were to be used, state legislation was needed to firmly anchor the principle of conservation easements in state law and to provide landowners with adequate assurance regarding the property tax ramifications of easements. With assistance from The Nature Conservancy (the Conservancy) and the Heritage Conservation and Recreation Service (formerly the Bureau of Outdoor Recreation), local citizens developed conservation easement legislation and initiated legislative action. In 1975, conservation easements were embodied in state law, allowing both public agencies and qualified private organizations to hold easements and requiring that easements be considered in determining property tax assessments. Subsequently, a concerted effort was launched to develop the Blackfoot River Conservation and Recreation Management Plan.

The Blackfoot Setting

A 34-mile (54.7 km) reach of the Blackfoot River was chosen for the pilot management project. Almost all of the reach is within Missoula County, and relatively few landowners are involved. It was felt that the involvement of only one local government and a limited number of landowners would make the project more manageable during the critical early stages of plan development and implementation. The owners in the pilot area are Champion International Corporation, a major forest products concern; Milwaukee Railroad; Burlington Northern; five ranching interests; and three other private interests. Public lands are managed by the University of Montana's Lubrecht Experimental Forest, Montana Department of Fish and Game, Montana Division of Forestry, and the Bureau of Land Management. Eighty-two percent of the land is privately owned. A 1976 user survey, conducted through the Blackfoot program, found recreation use during the summer season to be in excess of 20,000 visitor days.

The Planning Process

Planning began with the formation of a small ad hoc group of landowners, the county commissioners, a few local people, and one representative each from the Northwest Regional Office of the Conservancy in Portland and the Heritage Conservation and Recreation Service (HCRS) Mid-Continent Regional Office in Denver. From its inception, the planning process emphasized local management, voluntary landowner participation, and self-imposed restrictions on ecologically incompatible uses and development. Landowners were to retain all essential rights necessary to sensitively pursue both present and future agricultural and forestry activities. The local principals accepted the Conservancy's assistance with the easement aspects of the program and HCRS's technical assistance in developing the plan and providing the overall coordinating role.

After the initial dialogue which established common ground for the planning effort, the group was gradually expanded to include all 25 entities with a concern for the Blackfoot—corporate and other private landowners, county government, the University of Montana, two state agencies, two federal agencies, a garden club, and two conservation organizations, and other local citizens. The group thus formed operated under the auspices of the Missoula County Commissioners.

Landowners have agreed to responsible public recreational use on their portion of river corridor. Jerry Walker

Concurrent with its evolution, the planning group began developing the plan, which began with an initial "clay pigeon" draft developed by HCRS and modified by local criticisms and suggestions. The "clay pigeon" process was repeated by HCRS through seven drafts as the group expanded that first year. Through this process of fine-tuning and modification, the plan emerged as one developed by the people themselves to solve their own resource problems.

As the 1976 recreation season approached, the plan was ready for a one-year trial implementation period. The county commissioners formed the Blackfoot River Advisory Council, composed of representatives of the planning group, to administer the program during the initial trial period; necessary management funds were provided jointly by the county and the Montana Department of Fish and Game.

The Plan

A basic approach to the Blackfoot planning problem was separation and reduction of the various aspects to manageable parts. In keeping with this philosophy, recreation management objectives were separated from those of preservation. The landowners wanted positive results regarding recreation use of their lands before making long-term commitments through grants of conservation easements. In addition, the landowners did not wish to have public use incorporated in the legal instrument designed for long-term preservation of the river because they preferred to deal with public use on a short-term basis. In other words, they wanted greater flexibility regarding public use of their lands.

Consequently, the Blackfoot program provides for implementation of the recreation management phase of the plan independently of the easement phase. Currently recreation management objectives are being accomplished through a term cooperative-use agreement entered into by all landowners, other public agencies managing lands within the corridor, the county, and the Department of Fish and Game. Through successive one-year trials carried out since 1976, further fine-tuning has occurred, and the landowners have gained greater confidence in public agency management of public use of private lands. As a result, a five-year term agreement, which places full management responsibility for public recreation use of the private lands with the Department of Fish and Game, is now in effect.

The conservation easement phase is now being implemented along a portion of the corridor. Again, in order to reduce the plan to a manageable level, a 10-mile (16 km) reach of river was selected as the first stage of the easement program. Several landowners have holdings in this reach; thus, the first stage provides an opportunity to "test the water." Although there is no guarantee that the conservation easement program will be fully implemented, the intent of the Blackfoot River Conservation and Recreation Management Plan is that the river will be protected through successive stages of easement grants.

The easements, all of which thus far have been donated to the Conservancy, employ a two-tier system that provides for more restrictive covenants immediately adjacent to the river and less restriction in the portion of the corridor farther from the river. Each easement is negotiated individually.

A local attorney working with the Conservancy has developed a legal process which enables each landowner to place his easements in escrow with one of the Missoula banks for a certain time period or until adjacent landowners grant easements over their property. This legal instrument provides the landowner with the opportunity to ensure that his neighbors do not profit from his public generosity. Easements placed in escrow do not become effective until other easements are in effect on other specified lands. At the end of the time period, if all easements have not been granted, each grantor has the right to activate his easement or nullify it.

Essentially, the easement covenants ensure that the status quo of the corridor is maintained. Each landowner has agreed to forego development of his land that would adversely affect the ecological and aesthetic integrity of the Blackfoot. This agreement is also binding on all future owners of the property subject to the easement. The easement gives the Conservancy the right to enforce the development restrictions. The landowner retains the right to continue existing

farming and forest management practices which do not jeopardize those values the easement is intended to protect. The covenants allow for adequate maintenance and compatible improvements of existing buildings, fences, irrigation systems, and the like. The easement conveyed by the landowner constitutes a written will that ensures good stewardship of his lands along the Blackfoot through succeeding generations.

Results

A cooperative local partnership approach to recreation and preservation problems facing the Blackfoot River has thus far, proved to be effective, fiscally efficient, and politically applicable. The value of the present agreement administered by the Montana Department of Fish and Game is estimated to be about $250,000. This is based on the value of public access to the private lands within the 32-mile (51.2 km) recreation corridor for a five-year period. The landowners charge nothing for the public's privilege to use private lands.

To date, landowners have donated conservation easements in perpetuity to the Conservancy covering 1,572 acres (636.2 ha) of river frontage, and additional easement donations appear imminent. The value of the easements donated so far is approximately $400,000—a figure derived by appraising the fair market value of the properties without the easement and then under easement. The difference is the value of development rights foregone. Thus, the initial stages of implementing the Blackfoot River Conservation and Recreation Management Plan has generated private sector donations of $650,000 worth of interests in a valuable recreation resource at no acquisition cost to a public body.

In return for these donations, the landowners are now receiving public assistance with public use of their lands; their property taxes on lands under easement are based only on uses allowed by the easement (for example, taxes may be frozen at agricultural and forestry rates); and they may realize income and estate tax benefits.

Under the Blackfoot Plan, recreation management objectives are considered separately from preservation objectives. Jerry Walker

Why is the Blackfoot program working?

Several factors have emerged as being significant in the development of the Blackfoot program. First, landowner attitudes. They care about the river and wish to preserve their way of life. The landowners, both individual and corporate, are amenable to responsible public use of their lands, yet growing user problems require that solutions be developed—preferably by the landowners themselves. And the landowners are receptive to the potential income tax, property tax, and estate tax ramifications of conservation easements.

Local leadership was present not only from the group leader, but from various supportive titular and informal community leaders as well. The public agencies, particularly the Department of Fish and Game, displayed a spirit of cooperativeness and flexibility seldom found in bureaucracies. The experimental nature of the project required that initially the most manageable reach be selected; thus, relatively few landowners and only one local governing body were involved. Finally, the support provided by the Conservancy and HCRS was essential to the development of the Blackfoot program.

Conclusion

The Blackfoot River Conservation and Recreation Management Program is a dynamic, cooperative process of protecting and managing a natural resource of significant recreation and aesthetic value. Admittedly, problems remain, and full success is still to be judged.

But if the program continues to evolve toward adequate protection of the Blackfoot and continues to provide effective management of public recreation use of private lands, it can serve as an excellent example of a partnership approach to solving a recreation resource problem. It *has* demonstrated that government can help local people help themselves in protecting and managing significant scenic and recreation resources.

As an outdoor recreation planner with the Heritage Conservation and Recreation Service's Denver office, Gerald L. Stokes was assigned staff responsibility for the Blackfoot project from June, 1975, through December, 1978. Mr. Stokes is now recreation specialist in the Flathead National Forest, Kalispell, Montana.

Linear Park Management Challenges: Three Perspectives

by Kenneth J. Smithee, Joe Brown, and William C. Birdsell

Editor's note: Parklands which preserve and protect recreational space related to rivers, valleys, trails, or parkways tend to have linear boundaries because of the very nature of their central features. The planning, development, maintenance, and operation of these linear parks present unique problems not normally encountered by regular parks. Below, three highly respected professionals discuss challenges they have found most crucial to the effective management of linear parks.

Asphalt nature trails accommodate handicapped visitors. GCPRC

Kenneth J. Smithee

The Genesee County Parks & Recreation Commission has been fortunate in establishing two large linear parks that currently make up the majority of its park acreage. The Genesee Recreation Area, composed of 4,516 acres (1,806 ha) is bisected by the Flint River and the 650-acre (260 ha) Mott Lake, created by the construction of a concrete dam across the river along its entire eight-mile (12.8 km) length.

Major facilities in the park include: hiking and equestrian trails; trails and open areas for snowmobiles; paved bicycle trails; an off-the-road recreation vehicle area laced with trails for motorcycles, mini bikes, dune buggies, all-terrain and four-wheel drive vehicles. Other facilities include: two swimming beaches; a youth activities center; a 200-unit campground; boat launch and docks; extensive picnic and parking facilities; a paved model airplane field; plus an authentic 1860-1880 restored Historical Crossroads Village and an authentic 9½ mile (15.2 km) round-trip narrow-gauge railroad with a vintage steam locomotive.

The Holloway Reservoir Regional Park, located upstream of the Genesee Recreation Area, comprises 5,311 acres (2,124.4 ha) and is divided along its eight-mile (12.8 km) length by the 2,000-acre (800 ha) Holloway Reservoir and the Flint River.

This park includes: hiking and equestrian trails; snowmobile trails; a cross-country ski area; swimming beach; boat launch and docking complex; waterfowl refuge; a 1,500-acre (600 ha) outdoor education area; 200-unit campground; several parking and picnic areas; and a combination power boat and drag boat race course.

Planning and Development

Foremost among the considerations to be addressed in planning large linear parks is the effect the park will have on local governments.

Land acquisitions should be large enough to be developed for recreation purposes. Many linear parks end up with small parcels of land having little or no recreation value but requiring a large amount of maintenance and administration.

In some sections of the United States, local governments such as townships, cities, villages, and boroughs have final authority for approving master plans, site plans, and construction documents prior to the issuing of building permits for linear park construction projects located within their jurisdictional boundaries. Recently, the cost of developing our 200-unit Timber Wolf Campground was increased by over a hundred thousand dollars due to the delay in construction caused when Richfield Township sued the Commission to require prior township approval of construction plans. Although the court eventually upheld the Commission's position, it did not require the township to compensate the Commission for the added construction costs of this revenue bond project.

Uniformity in planning and design of a linear park is necessary for efficient and economical operation. Contacting appropriate agencies years in advance of anticipated road, highway, sewer, water, sanitary landfill, power line, community fire protection facilities, and other types of improvements may help coordinate such improvements with park plans, thus minimizing potential conflicts with sound park planning principles. Adjacent land use, zoning, and vehicular circulation required for emergency vehicles, as well as bus routes for local school districts, should be given paramount consideration.

Frequently the same park will be served by two or more utility companies; thus coordinating planning between companies is highly desirable. Joint planning and financing of such improvements save dollars for both the operating agency and the local government. Where such improvements are necessary for the park proper, the parks department does not have to build such costly facilities totally at its own expense. It can share costs with the local community, thus helping to lessen the tax burden on local citizens. In the case of some large parks, however, the parks agency must assume the total cost because the local community is financially unable to fulfill this responsibility.

Transportation and Decentralization

Foremost among the major management problems involved with large linear parks is the difficulty entailed in getting from one section of the park to another, due to such natural and man-made barriers as rivers, lakes, mountains, swamps, heavily forested areas, sharp dropoffs, railroad tracks, and freeways.

Because of this problem, major emphasis must be placed upon decentralizing park functions to the extent that designated sections of the park become much more self-sufficient than is generally the case in other types of parks. If this is not done, too much time will be spent by personnel traveling from one section of the park to another.

Ice sailing is a popular activity in Genesee County Parks. GCPRC

This will decrease the staff time actually spent on maintenance of buildings and grounds, park security, facility management, and other routine functions. In order to decentralize the operation, more money must be spent initially on field offices, shops, and storage area. However, in the long run, this extra cost should more than be made up by salary savings realized through reduced travel time.

Effective Communications

Another necessity for effective linear park management is a dependable communications system that reaches throughout the park, and preferably throughout the total park system.

An effective department-wide radio network will save countless hours of time over the course of a year and should result in better, more efficient, and economical management. Studies show that such radio networks, properly used, pay for themselves over a period of time by helping to avoid unnecessary staff travel, insuring quicker response time for work projects, and alleviating problems caused by the inability to communicate quickly and effectively.

Another facet of improving communications is linking all telecommunications through a central switchboard as is currently being implemented in Genesee County with Dimension 100 PBX System.

Law Enforcement

An additional service, now available in some localities with linear parks, is a county-wide or multi-county police network that links all police agencies within a given geographical area. This results in better police coverage, faster initial response to requests for assistance, and backup support of other police agencies when required.

Genesee County Park Rangers are linked to such a network on a 24-hour basis. The system is operated by the Michigan State Police, in cooperation with the other local units of government.

The need for the parks agency to have law enforcement powers on all park property, rather than depending entirely on each local government to enforce park rules or laws on the part of the park located within its respective geographical limits, cannot be overemphasized. This setup provides for uniform enforcement throughout the linear park and the entire parks system.

Needs for Special Types of Equipment

Coupled with the law enforcement network is the need for more sophisticated or special equipment such as helicopters, high-speed patrol boats, dirt bikes, or snowmobiles to traverse the natural or man-made barriers which cannot be crossed by conventional transportation means. Also, use of mounted patrols is feasible in many linear parks because of their ability to reach otherwise inaccessible areas.

Controlling Ingress and Egress

Paramount in planning large linear parks is the need to keep the number of park entrances to an absolute minimum and to develop an extensive intra-park road network, thus insuring better visitor control within the park. Park roads should be curved wherever possible to keep vehicles traveling at a slower rate of speed. They should be located to take maximum advantage of the topography and scenic viewpoints without encroaching on natural areas. Properly spaced viewpoints are a help in maintaining park security. If the park has been properly planned, sections may be closed off during slow periods, thus reducing the amount of necessary maintenance and ranger coverage at a considerable dollar savings.

Usually the boundaries of linear parks are exceptionally long and relatively narrow in width. Controlling access of unauthorized motorized vehicles along lengthy park boundaries is a constant problem. Because the cost of erecting a stable and sturdy fence along such boundaries is so expensive, park managers frequently must resort to other means of solving this dilemma.

In Genesee County, use of posts and cables are discouraged because of the large per capita snowmobile ownership and the resultant danger to snowmobile riders. Trenching and creating mounds to block access, with proper signing for safety purposes, has proven to be the most effective method of control. Such measures, coupled with firm law enforcement, have proven helpful.

In summary, the key to sound linear park management is quality long-range planning, effective communications—both internally and externally, close coordination and consultation with all local units of government, decentralization of maintenance and management functions, along with a highly mobile security force.

Kenneth J. Smithee is Director of Michigan's Genesee County Parks and Recreation Commission.

All photos by Genesse County Parks and Recreation Commission.

Joe Brown

From Rockfish Gap near Waynesboro (VA) to Oconaluftee just north of Cherokee (NC), the Blue Ridge Parkway winds 470 miles (752 km) through southern Appalachian mountains and valleys to connect Shenandoah and Great Smoky Mountains National Parks.

En route, this scenic motor road traverses a number of jurisdictions, including two states, 29 counties, 13 planning regions and eight Congressional districts. It crosses three national forests and skirts the boundary of a fourth. Its final miles are located on an Indian reservation. It has an estimated 4,000 to 5,000 adjacent property owners and neighbors along roughly 1,200 miles (1,920 km) of boundary.

The Parkway ranges in altitude from 650 feet (195 m) above sea level at the James River in Virginia to 6,050 feet (1,815 m) at Richland Balsam Mountain in North Carolina, and averages some 3,000 feet (900 m) above sea level throughout its length. It encompasses more degrees of latitude and longitude than Alaska's Katmai National Monument, the largest unit of the National Park System, and presents a diversity of flora and fauna unsurpassed anywhere in the system.

Public access to the Parkway is provided at 61 points, including 20 served by federal primary highways and four by components of the Interstate Highway System. All told, there are 353 deed reserved public road easements and 575 deed reserved private road easements.

Located within a one-day drive from most of the east's major metropolitan centers, the Parkway has become one of the most popular units of the National Park System, attracting more than 15 million visits during 1978, down slightly from an all-time high of 16.2 million in 1976. While these facts, figures, and statistics will be informational to those unfamiliar with this linear park, it is intended primarily to establish a basis for discussion of some of the difficulties associated with management of an area with the Parkway's length and diversity.

Distance Factor

If everything complicating Blue Ridge Parkway management could be summed into one word, that word would be "distance." The daily necessity of having to focus clearly on situations existing literally hundreds of miles from Parkway headquarters at Asheville (NC), often is difficult and occasionally impossible. Vision tends to become blurred by distance and only regular on-site inspection can bring matters into their proper perspective.

Upkeep of historic structures and other facilities along the 470-mile (752 km) Blue Ridge Parkway demands constant attention and frequent on-site inspection. NPS

This, of course, involves time and travel, and much of both. But it is vital in a linear park, such as the Blue Ridge Parkway, that the superintendent and his staff be constantly aware of situations that can vary widely in nature from state to state, from county to county, from district to district. Although having district and sub-district offices located at strategic intervals is a definite advantage, it does not absolve the headquarters management team of the responsibility for awareness, which can be maintained only through continual communication.

Adjacent Lands

The Blue Ridge Parkway is designed to display the best of a variety of scenic, historic, and natural features. Its route tends to give visitors the impression they are in a park with boundaries extending to the horizon. When construction on the Parkway began in 1935, and for three decades thereafter, the integrity of this scenic impression was not greatly threatened by the activities of the park's neighbors. During the past dozen years, however, the demand for primary or vacation homes in a rural setting has resulted in a number of developments that are easily visible from, and in some cases adjoin, the Parkway. It is reasonable to assume this type of growth, and its accompanying visual intrusion, will continue, particularly with improved access to and from metropolitan areas.

Many parks, no matter what their configuration, face this dilemma. But in the elongated parks, with their extended boundaries and, as in the case of the Parkway, easy access, the problem is more acute since it often is impossible to isolate in-park activities from those outside.

Responding to a Variety of Park Neighbors and Visitors

Because the Parkway does not have an established boundary, and because of management's long-standing opposition to perceived non-conforming uses of adjacent lands, there has been some public concern that the National Park Service will attempt to acquire these lands in order to preserve the Parkway's scenic integrity. This concern has been voiced loudly in some sectors, while there scarcely has been a murmur of protest in others—a situation that illustrates another facet of linear park management.

Management at the Blue Ridge Parkway must understand and deal with people and their governments in two states, 29 counties, 13 planning regions, and eight Congressional districts, plus various state and federal agencies. Differences often are as dissimilar as night and day, yet management must speak with a single, consistent voice, that of the National Park Service.

Management must consider the wants and needs of the national visitor, most of whom do little pre-visit planning, as well as those of the day-use picnicker, hiker, or fisherman. It must be as concerned about the quality of visitor experiences at the Pioneer Farm at Humpback Rocks as it is with the quality of concessioner food and service at Pisgah Inn, more than 400 miles (640 km) to the southwest. And it must translate these concerns into necessary actions.

Maintenance

The configuration of a linear park forces careful allocation of money, manpower, and other resources. They cannot be concentrated in a comparatively compact area. They must be distributed in ways designed to promote uniformity throughout the length of the park. Resource management and visitor protection personnel must be stationed at strategic intervals and locations. Interpretation must design and carry out programs, activities, and exhibits geared to a largely transient audience. Maintenance forces also must be dispersed to areas of greatest need, and all budgets must be tailored to meet practical requirements as well as political realities over a considerable distance.

The Blue Ridge Parkway, for example, stations rangers and/or interpreters at 19 separate areas during the peak visitor season and operates 12 different maintenance areas. This does not include park headquarters at Asheville or Virginia unit headquarters at Roanoke. Time and experience has shown that this number of locations is necessary for adequate visitor enjoyment, resource management and protection, and a smoothly efficient maintenance program.

Budget Considerations

Without proper consideration of all of these factors, the costs involved in management of a linear park can appear to be excessively high. The Parkway's annual budget of some $5 million, when simply divided by the road mileage, figures out to slightly more than $11,000 per mile ($17,600 per km). Most superintendents would rejoice at the prospect of a similar figure in their budgets, but there is much more to it than meets the eye, as just a quick look at operations will show.

With 12 maintenance areas to supply, original and replacement equipment often is purchased by the dozen rather than singularly. More than 50 passenger vehicles are necessary to patrol the road and transport personnel in order to perpetuate vital contact and communications. More than 100 trucks, up to three tons, move people, materials, and, in some cases, even double as snow plows. Some two dozen tractor/mowers are needed to maintain road shoulders and recreation areas. And then there are pieces of heavy equipment such as graders, rollers, front-end loaders, etc., none of which are inexpensive.

The Parkway's 470 miles (752 km) encompass more than 81,000 acres (32,400 ha). Although most of this is zoned and managed as "natural," more than 1,300 acres (520 ha) are devoted to 18 developed areas serving the needs of visitors and park management. Facilities include concession development, campgrounds, picnic grounds, administrative and maintenance facilities, various buildings, utilities, and service roads. Maintaining these grounds and facilities is a matter of constant attention.

In order to meet a demanding schedule, a minimum 25 miles (40 km) of road must be resurfaced each year at rapidly escalating costs. If the schedule is not met, the road base deteriorates and must be rebuilt at even greater expense. Some 1,000 tent and trailer sites in nine campgrounds must be cared for, as must more than 800 picnic sites in 13 areas. Nine concessioner areas and hundreds of miles of trails must be maintained. The list goes on.

If this begins to sound as if it is a justification for budget requests from linear parks, so it is, in a way. Because of their physical characteristics, these elongated areas often require special consideration. Their problems, nearly all generated by distance, are special, no two alike. But all of these areas are stretched to what occasionally appears to be a breaking point.

Yet, whatever their problems, be they normal or unusual, linear parks such as parkways and seashores and rivers and trails have been warmly received and widely used by the visiting public.

Joe Brown, Southeast Regional Director for the National Park Service, is a former superintendent of the Blue Ridge Parkway. He also has been superintendent of Virgin Islands and Everglades National Parks and was superintendent as well as deputy general superintendent of National Capital Parks. Prior to joining the National Park Service, Mr. Brown was with the Fairfax County (VA) Park Authority, the Dade County (FL) Park and Recreation Department, and the Florida State Park System.

William C. Birdsell

The third "major urban park" of the National Park System, Cuyahoga Valley National Recreation Area (CVNRA), preserves 32,000 acres (12,800 ha) along 22 miles (35 km) of the Cuyahoga River between the cities of Akron and Cleveland in northeastern Ohio for public use and enjoyment. It is currently being developed as a large linear park.

In planning and developing this new park, it has been necessary to consider the relationship of the linear shape to park management techniques and operations.

First, and probably most obvious, is the influence of the linear shape of the park on basic park operations.

Divide Park into Manageable Units

To provide adequate maintenance and law enforcement coverage of long narrow parklands, it is desirable to divide the park area into districts or units for management purposes. Each district must have its own maintenance and protection personnel stationed within the area to reduce the response time necessary to meet various urgent park needs. This includes manpower as well as equipment and supplies needed to meet such operational requirements as visitor service assistance, first-aid, responding to law enforcement situations, and maintenance emergencies.

The control of park boundaries and protection from encroachments is always a concern to park managers. In linear parks, long miles of park boundary result in more immediately adjacent park neighbors. This creates opportunities for encroachments, major and minor, and necessitates increased patrolling year-round to protect park resources and the integrity of parklands.

Traffic

Linear parks are usually crisscrossed with numerous roads and highways which are heavily traveled by non-park traffic between surrounding communities. As recreational use of the parklands increases, conflicts between park users and non-park traffic continues to grow. Commuters tend to drive faster on park roads, disobeying posted speed

limits, and not thinking of the dangers to park users and wildlife. Accidents increase as traffic conflicts increase; this necessitates more law enforcement patrols to protect the park users and resources. In addition, these miles of roadways and the intensitiy of their use directly affect the cost of road maintenance, including snow removal, litter pick-up, and repairs, as well as road patrol activities.

The large number of road access points along a linear park requires additional visitor orientation-information centers and interpretive exhibits. Due to the wide range of interest points and the dispersal of scenic features and resources, combined with numerous entrance roads, visitors arrive from many directions and with varied objectives. Therefore, proper signing, providing direction to the park as well as within the park, is also extremely important in controlling access and visitor use patterns.

Adjacent Lands

The numerous access points to linear parks also provide opportunities for tourist-related commercial development on adjacent lands to take advantage of visitors passing along these routes. Only through careful land-use planning and the use of effective zoning, design restrictions, and similar controls, can the communities surrounding linear parks control this development so it will not become a "honky-tonk" of establishments competing for their share of the travel dollars. This presents an additional challenge to park managers—to guide these communities in reducing the impact of "tourist trap" facilities, based on the manager's experience in dealing with such intrusions.

Utility Corridors

The "barrier effect" of a long narrow park on surrounding development can be most accute when related to utility corridors in heavily developed areas. A good example is CVNRA, which lies within a population center of over 5 million people living within a 50-mile (80 km) radius of the park. The surrounding communities tend to be fast-growing suburbs with increasing needs for water and sewer lines and electrical transmission lines. Extensions of these lines through parklands is usually in conflict with park goals of resource protection and the preservation of open space. In such cases, these crossings must be denied.

However, in the case of an over twenty-mile-long (32 km) park in the heart of a fast-growing urban area, some concessions for special circumstances may be necessary. Since the park is a vital part of the total community, the careful selection of a few well-placed corridors may be required, to permit utility crossings under tightly controlled conditions. Also, in the case of linear parks which may not be extremely wide at certain locations, it may be economically feasible to require the location of utility lines underground for the relatively short distance when these lines must cross through parklands. Dealing with the realities of these situations necessitates careful management consideration and close cooperation with all parties concerned.

Interpretation and Use of Facilities

Providing interpretation and recreation facilities which are convenient to different parts of a linear park also presents a management challenge. All visitors may not have an opportunity to visit the entire length of a "stretched-out" park to take advantage of its full scope of resources. Yet they should be provided access to those nearby facilities which they may wish to visit.

This necessitates careful control of transportation as it relates to all major resources. Wherever possible mass-transit must be considered to reduce the number of private vehicles using park roads and necessitating parking facilities and to provide access for those who are not able to visit the park by private vehicle for various reasons.

Dealing With Multiple Jurisdictions

Finally, there is the necessity of dealing with multiple jurisdictions along the sides of a linear park. This particular concern has been extremely evident at CVNRA, a park located in two counties related to two major cities, and adjacent to twenty separate communities made up of cities, villages, and townships. This has required that park management deal innovatively with numerous separate law enforcement agencies, fire departments, zoning boards, planning commissions, and other public officials in each of these communities.

Obviously, it is impossible to attend every meeting and to communicate with the officials of every community. Recognizing this fact early in the development of CVNRA, it was possible to work closely with other interested parties to establish a separate official body, with representatives from each of the effected communities, to meet regularly to deal with park-related issues and to establish effective two-way communication. This group considers solutions to problems of common concern such as more effective zoning, transportation planning, fire protection, and travel-related developments adjacent to the park. By providing a vehicle for park management to keep abreast of problems of local concern before they reach crisis proportions, this group has proven valuable to park development.

In conclusion, managing linear parks presents a challenging opportunity to preserve the spread-out resources of the area while making them fully available for recreational use by the widest possible spectrum of visitors. With advance planning and full recognition of the differences which these parks present, this challenge can be met.

William C. Birdsell has served as Key Man and Project Manager during the initial stages of the development of Cuyahoga Valley National Recreation Area and as the first Superintendent of this third major urban park of the National Park System. In this capacity he also wears a second hat as State Coordinator in Ohio for the National Park Service. His nearly twenty years with the NPS have included Park Ranger assignments in the West as well as Chief Park Ranger at Gettysburg National Military Park and Eisenhower National Historic Site in Pennsylvania.

Carrying Capacity

by David W. Lime

Editor's note: The controversial subject of recreational carrying capacity inevitably confronts managers of rivers and trails. The following article offers some practical guidelines for an intelligent approach to this challenge.

Recreation planners and administrators increasingly are being challenged to manage growing numbers of outdoor recreationists. Many areas, both public and private, are being threatened by overuse. For some managers the situation is reaching crisis proportions—the physical environment is being damaged beyond acceptable limits and the people visiting these areas are no longer receiving a quality or enjoyable outdoor experience.

Determining recreation carrying capacity is frequently voiced as a manager's answer to solving the problem of overused recreation areas. Recreation carrying capacity is a complex and troublesome concept that incorporates principles of the social as well as the physical and biological sciences. It is a management concept, a framework or way of thinking about how to plan and manage a particular recreation resource. It is *not* the basis for some magic formula that gives the manager the answer to the continuing question, "How much use is too much?" Deciding how much and what kind of use is acceptable for an area must be based on managerial judgment and experience. The uncertainty of such decisions can be reduced substantially by a consideration of the interrelations of:

1. Management objectives
2. Recreation user attitudes and preferences
3. Impacts of recreation use on natural resources.

In defining carrying capacity, I assume that the primary goal of recreation management is to provide enjoyment and benefits for people. There are certain constraints in doing this, of course—budgetary, administrative, legal, and the capabilities of the physical environment. Thus, managers must determine the *amount and type of use an area can sustain over a specified time period without causing unacceptable change to the physical environment or to the experience of the user.*

In determining carrying capacity, management must state the kinds of recreation opportunities that will be provided. David Lime

Following are some basic principles that relate to the concept of recreation carrying capacity.

1. Carrying capacity can be defined only in light of management objectives for the area in question.

Almost any site can be "hardened" to accommodate the type of recreational opportunity called for by management. Therefore, management objectives should define, as specifically as possible, the kind of recreational opportunity or opportunities the area is to provide.

Two types of management objectives can be differentiated:

1. Broad objectives influenced or controlled by enabling legislation and general administrative policy.
2. Explicit objectives that delineate the desired environmental setting to be sustained and user opportunity or opportunities the area is to produce.

Broad, general objectives can identify:

1. The kinds of activities that might be provided (e.g., camping, picnicking, fishing, sightseeing, hunting).
2. Whether consideration will be given to the protection of natural features.
3. Whether the area should be developed to serve as many people as possible or should be limited to specific kinds of users, such as campers or hikers.

Explicit objectives are more difficult to define because they must identify *the kinds of opportunities* to be provided, and *how* and *where* these opportunities will be managed and sustained. Here, the manager must be concerned with such issues as:

1. Types of use desired.
2. General use intensity or level of solitude desired.
3. Level of development and accessibility of recreation facilities desired.
4. General degree of naturalness desired.

These more explicit objectives also may be influenced by administrative and policy constraints. And, financial, personnel, and technical limitations can inhibit certain objectives as well.

Management objectives should be realistic and attainable. Establishing objectives must be a dynamic process. Objectives must be modified if they are not working and/or if they are no longer relevant. The potential for evaluating whether or not objectives have been achieved is increased when objectives have been quantified and are specific rather than ambiguous.

2. Obtaining attitudes and preferences of recreation users and non-users can help administrators set objectives and suggest needed changes in current policy.

Usually there is more than one solution to a given management problem. Soliciting public opinion allows the manager to review the mix of attitudes that exists regarding a specific issue.

Even subtle changes in the environment of a recreation site can cause many recreationists to become dissatisfied and not return. David Lime

Frequently, users and potential users disagree as to what they want—a quality experience to one person may be altogether unacceptable to someone else. Furthermore, user preferences may be different from manager preferences and from what managers believe the user wants.

Gathering data on public attitudes can be especially useful in identifying the range and mix of public desires for a given recreation site or geographic region. Such information can help managers define *specific* conditions or actions necessary to achieve management objectives.

For example, an agency might decide to provide basic camping facilities in relatively remote locations that are accessible by automobile. Studies of attitudes could provide indices of how visitors might respond to different sizes of campgrounds; the type of setting in which individual camp units are located; spacing between units; the kind and spacing of toilets, water facilities, trails, playground equipment, etc.; design of access roads; and various interpretive materials.

The results of such attitude surveys are not a substitute for management experience and good judgment. Nor do such studies make decisions easier for managers. On the contrary, they may increase the number of alternatives that must be considered.

It also is important to know who may oppose various management actions. Once management decisions are made, especially on controversial issues, it is as important to explain why users' preferences cannot be met as it was to learn what their opinions were.

3. A full range of recreation opportunities within a region are desirable to satisfy the diversity of recreation tastes.

Managers should set objectives and standards for an area that will result in a balanced system or spectrum of recreation opportunities within a region. These should include not only a variety of activities (hiking, swimming, hunting, boating, etc.) but also an assortment of different kinds of opportunities for each activity (auto-access camping, remote area camping, etc.). No one manager or agency need feel obligated to meet the demands of *all* recreation users. Each public agency, for example, could aim at providing one or more *specific* types of recreation opportunities and refer those wanting something different elsewhere.

Obviously, region-wide collaboration among private and public managers is mandatory if a full and appropriate mix of opportunities is to be provided. There does seem to be some progress in meeting this objective among managers of developed campgrounds, for example. Some federal and state agencies indicate they plan to take a major role in providing low-density, simple campground development and are encouraging the private sector to take the lead in providing intensively developed facilities.

4. The character and amount of change permitted to occur to the resource resulting from recreation use must relate directly to management objectives.

The ability of an area's resources to withstand use is an important constraint on carrying capacity. But, knowing what changes occur under specific levels and kinds of use does not by itself tell the manager what is an acceptable amount of change. To define what change shall be permitted, the manager should relate resource change to specified management objectives.

Many "standards of acceptable change" exist that the manager could use. For example, in an elaborate, high-density-use camping area, the manager could employ a variety of techniques to offset resource impacts—such as paving, placing barriers, and planting hardy species. On the other hand, in a campground where the objective is to provide camping in a fairly natural setting, the amount of resource change permitted would be comparatively small. In this case, the manager would probably rely on use restrictions rather than on techniques that would "harden" the site.

5. Many techniques are available to manage an area for its carrying capacity; the techniques selected, however, should depend on the management objectives for the area.

More than a decade ago, U.S. Forest Service researchers developed a framework for discussing ways to manage both natural resources and visitors for carrying capacity. They emphasized that the selection of a technique or combination of techniques

Table 1.—Some measures to control the character and intensity of recreational use to meet desired management objectives.

Type of control	Method	Specific control techniques
Site Management (Emphasis on site design, landscaping, and engineering)	Harden site	Install durable surfaces (native, nonnative, synthetic)
		Irrigate
		Fertilize
		Revegetate
		Convert to more hardy species
		Thin ground cover and overstory
	Channel use	Erect barriers (rocks, logs, posts, fences, guardrails)
		Construct paths, roads, trails, walkways, bridges, etc.
		Landscape (vegetation patterns)
	Develop facilities	Provide access to underused and/or unused areas
		Provide sanitation facilities
		Provide overnight accommodations
		Provide concessionaire facilities
		Provide activity-oriented facilities (camping, picnicking, boating, docks, other platforms, playground equipment, etc.)
		Provide interpretive facilities
Direct Regulation of Use (Emphasis on regulation of behavior; individual choice restricted; high degree of control)	Increase policy enforcement	Impose fines
		Increase surveillance of area
	Zone use	Zone incompatible uses spatially (Hiker only zones, prohibit motor use, etc.)
		Zone uses over time
		Limit camping in some campsites to one night, or some other limit.
	Restrict use intensity	Rotate use (open or close roads, access points, trails, campsites, etc.)
		Require reservations
		Assign campsites and/or travel routes to each camper group in backcountry
		Limit usage via access point
		Limit size of groups, number of horses, vehicles, etc.
		Limit camping to designated campsites only
		Limit length of stay in area (max./min.)
	Restrict activities	Restrict building campfires
		Restrict fishing or hunting
Indirect Regulation of Use (Emphasis on influencing or modifying behavior; individual retains freedom to choose; control less complete, more variation in use possible)	Alter physical facilities	Improve (or not) access roads, trails
		Improve (or not) campsites and other concentrated use areas
		Improve (or not) fish or wildlife populations (stock, allow to die out, etc.)
	Inform users	Advertise specific attributes of the area
		Identify the range of recreation opportunities in surrounding area
		Educate users to basic concepts of ecology
		Advertise underused areas and general patterns of use
	Set eligibility requirements	Charge constant entrance fee
		Charge differential fees by trail, zone, season, etc.
		Require proof of ecological knowledge and recreational activity skills

to control the character and amount of use largely depended on the specific management objectives for the area. Further, in selecting techniques managers should seek to: (1) reduce conflicts among competitive uses, (2) reduce the destructiveness of some users, (3) increase the durability of the physical resource, and (4) provide increased opportunities for visitor enjoyment. These goals can be achieved by the three overlapping types of control measures—site management, direct regulation of use, and indirect regulation of use (see accompanying table).

It is important to recognize that site management techniques can have an immediate and significant effect on the character of the area and the kind of recreational opportunity offered. Hence, drastic or even seemingly subtle changes in the design and type of facilities can alter the character of the site to the point that it may no longer be satisfactory to many current users. This transition often has been observed in small, informal campgrounds that have been closed or have evolved into large, modern, intensively developed camping areas. The resulting process of "creeping campground development" forces out those campers who are seeking solitude and contact with nature.

Many direct and indirect ways are available to the manager to modify or control the recreational behavior of users. Direct controls regulate when visitors can use the area, what area they can use, how long they can stay, and what activities they can engage in. Some of these measures greatly restrict the user's freedom of choice.

Indirect controls, on the other hand, are more subtle and less obtrusive. They do not interfere directly with an individual's freedom of choice. In essence, with indirect controls the manager seeks to modify user behavior without the user being aware of this influence. For instance, reducing trail maintenance in certain areas might convince some hikers to use other trails that are better maintained. As another example, hikers seeking solitude could be informed specifically where use is lightest. In both examples, such actions could help redistribute use and might also help more people increase their enjoyment.

The indirect, more subtle types of controls should be tried and evaluated before the more authoritarian, heavy-handed kinds of action are pressed into service. In particular, do not apply heavy-handed use restrictions because they appear cheapest or administratively convenient. When more regulatory types of measures are necessary, they should be applied as far in advance of the visitor's arrival at the site as possible.

Understanding public attitudes can help identify the recreation opportunities needed for a given site. David Lime

6. Ultimately, the recreation manager is still left with the difficult decision of deciding how much and what kinds of use are acceptable for a given area, and how and where such uses are to be managed and sustained.

For some decisions, the appropriate course of action is rather clear because there are few alternatives. In others, information necessary to make the decision may be meager or conflicting. Further, decisions may be influenced by political, administrative, legal, budgetary, and resource constraints.

Researchers can help managers by finding out what people want from a recreation experience and what they think about alternative actions. Researchers also can help by determining how the resource will be affected by various kinds and levels of use. However, such information only reduces the range of uncertainty associated with a given decision; it does not eliminate the uncertainty. As stressed earlier, there is *no magic formula* for capacity and there is *no magic number* that is *the* capacity for an area.

Without a marriage of managerial judgment and facts, the quest for quality recreation management appears destined for "rougher days." Some warn that without adequate public participation in resource decision making ". . . resource managers will find themselves in the backwash of the environmental movement, serving as mere resource custodians with most decision making in other hands."

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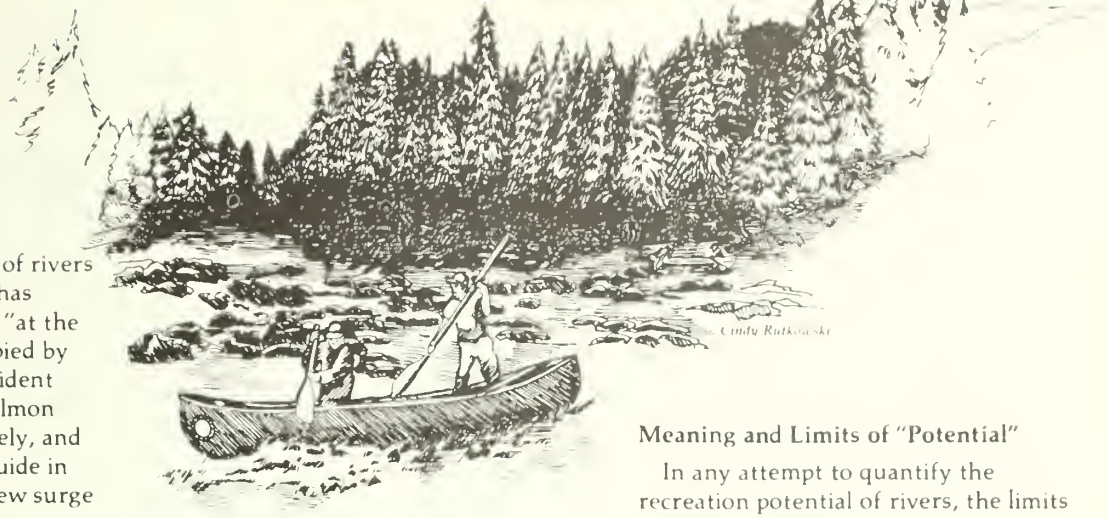
This article has been modified from David W. Lime's paper "Principles of Recreational Carrying Capacity," in the Southern States Recreation Research Applications Workshop Proceedings Sept. 16-18, 1975 Asheville, North Carolina.

Instream Flows and Recreation

by Ronald Hyra



By all accounts, recreation use of rivers is increasing. Author Rod Nash has described river running as being "at the takeoff point in popularity occupied by downhill skiing in the 50s." President Carter's recent trip down the Salmon River publicized the activity widely, and has been credited by one river guide in Tennessee as creating a whole new surge of interest in river running.

With the growing popularity of river running has come a recognition of the need to maintain water in our rivers and streams for such instream recreation uses, aesthetic enjoyment, and fish and wildlife preservation. Yet, demand for water for out-of-stream uses—such as energy and irrigated agriculture—has risen too. Therefore, we have a growing need for sound methods of determining instream water requirements.

Cooperative Instream Flow Service Group

In July of 1976, the Cooperative Instream Flow Service Group (IFG) was established as a satellite group within the U.S. Fish & Wildlife Service to meet this need. This group, located in Fort Collins, Colorado, was conceived as a multi-agency, interdisciplinary entity which would become a focal point for instream flow studies and activities. The goals of IFG were: (1) to develop improved methods of assessing and predicting instream flow requirements for fish, wildlife, other aquatic organisms, recreation, and aesthetics; (2) to develop and improve guidelines for implementing instream flow recommendations; and (3) to establish an effective communication network for disseminating instream flow information.

The IFG functions in a number of roles:

- *Advising.* The group provides advice and offers recommendations to any government agency or private entity regarding design, analysis, and methods of implementing instream flow recommendations.
- *Synthesizing.* IFG pulls together and analyzes the results of relevant research in this area.
- *Training.* IFG conducts workshops and short courses to give practitioners a better understanding of legal, institutional, and technical constraints associated with implementing instream flow recommendations.
- *Initiating.* The group maintains close contact with the research community and continually encourages researchers to direct their efforts toward better understanding of the relationships between stream flow, fish and wildlife habitat, and recreation potential.

Predicting Recreation Impact and Determining Potential

IFG has developed a method that relates the amount of stream flow (in terms of depth and velocity) to the suitability of the stream for recreational uses and certain species of fish. Additional testing of this method is currently in progress.

Basically, hydraulic simulation is used to predict the depth and velocity at any changed stream flow. From this data, the impact of the change in flow upon recreation potential and fish habitat can be predicted.

In addition to impact analysis, this method can also determine the recreation potential of a stream. Since the method limits its focus to elements of stream flow, however, it only can deal with that portion of the total recreation potential which is related to stream flow. Those activities identified and studied by the IFG include three types of fishing, three types of water contact activities, and six types of boating.

Assessment of the potential for each of these instream recreation activities is made by calculating two unique curves to indicate the suitability of the water depth and velocity for that activity. Based upon these curves and the actual water depth and velocity, an index of recreation potential can be determined.

Meaning and Limits of "Potential"

In any attempt to quantify the recreation potential of rivers, the limits of the term "potential" must be understood. If a resource has recreation potential, it means the resource has the capability to sustain use. Recreation use will not necessarily occur simply because a resource has recreation potential. Nor will recreation use necessarily change if the recreation potential changes. Demand for a specific activity in a specific area compared to the supply of alternative opportunities will determine use, and the upper limit of use will be determined by the carrying capacity of that specific place.

An assessment of recreation potential takes into consideration how well the resource can resist deterioration due to recreation use (physical carrying capacity) as well as how well the resource will provide the psychological experiences expected by the users (social carrying capacity). Furthermore, the assessment of potential assumes a management objective carrying capacity—the level of use most appropriate for both the protection of the resource and the satisfaction of the participant. A management objective dealing with carrying capacity is implemented by the adoption of use criteria which are usually expressed as standards.

Carrying Capacity Problems

Most standards for river recreation boating use are based on a design load standard expressed as boats per linear mile of stream. A problem with this type standard is that it ignores the stream width. A 1977 Bureau of Outdoor Recreation publication, which surveyed park administrators and recreation planners, found suggested optimum carrying capacity for non-power boating on flowing water to be 6.25 craft per mile (3.9 craft per kilometer). This would result in a spacing of approximately 840 feet (256 m) between craft. If the stream

were 25 feet (7.6 m) wide, each boat would have about .5 acre (.2 ha); if the stream were 200 feet (61 m) wide, each boat would have nearly 4 acres (1.6 ha).

Currently, the IFG is assessing that portion of recreation potential which changes with the stream flow on the basis of water surface area (similar to the way recreation potential is determined on a lake or reservoir) rather than on the basis of linear distance. At the present time, it is assumed that the areal expression of a river recreation use standard is sufficiently valid to proceed with the method. No areal standards for river recreation are being developed by the IFG. At this time it is assumed that the greater the area of suitable water in terms of its depth and velocity, for a recreation activity, the greater the recreation potential.

Assistance for Recreation Planners and Managers

In order to develop a technique for assessing the recreation potential of various stream flows, the IFG has made a number of assumptions. This has been necessary because the group is working with recreation planners and managers faced with the responsibility of making decisions today. A need for a method to assess instream flows for recreation exists now, even while new frontiers are opening and validation research is underway.

Since water allocation decisions must be made now, IFG is assisting planners and managers, utilizing existing state-of-the-art methods. As additional research is completed and new tools are developed, IFG will improve its techniques in order to provide decision-makers with better information with which to protect and preserve instream flows.

Ronald Hyra is an outdoor recreation planner with the Heritage Conservation and Recreation Service, on detail to the Cooperative Instream Flow Service Group. For more specific information about the method he describes above, contact Mr. Hyra at 2625 Redwing Road, Fort Collins, CO 80526.

Acquisition and Development of an Urban Regional Trail System

by Hulet C. Hornbeck

The East Bay Regional Park District is a special district set up under the laws of California and located in the East Bay area of the San Francisco Bay, comprising two counties, Alameda and Contra Costa. Both of these counties have extensive bay and delta shoreline and many hills that, to a certain extent, separate the population of 1,700,000 people. In December 1973, the EBRPD adopted a master plan that, along with extensive development of shoreline and hill and urban parks, included interparkland trails for hiking, jogging, equestrian, and, in some cases, bicycle use, ultimately to involve several hundred miles along with the several hundred miles of trails that are inside our many parklands.

We had acquired rights of way to some 47 miles (75 km) of this proposed system at the time that California was struck by Proposition 13. Though the District's goals must be somewhat curtailed, the trail acquisition program is proceeding.

The purpose of this article is to encourage other park departments and agencies to undertake the acquisition and development of trails. Extensive review of other agencies throughout the country shows that this recreation need is not being met. By far, the most difficult aspect of parkland acquisition falls in the category of trails. Mere mention of the creation of corridors for public access and recreation through lands adjacent to private property heightens concerns of those private owners and frequently generates opposition to the trails and staging sites. In fact, the owners will use the very act that should encourage trails in the case of California, the Environmental Quality Act, to bar development, claiming negative effects of the trails.

Helpful Structures

Much structuring, therefore, must occur to ensure that trail projects do not fall by the wayside. Following is a list and description of structures we have found encouraging to the acquisition of trails:

1. *The staff of the department responsible for acquisition of the trails must be highly motivated and willing to commit itself to a long-range program.* It would be unfair to a 9:00 to 5:00 person to bring him or her into the project. Many night meetings with groups and individuals and public agencies occur. These night meetings in effect, support the daytime activities, and therefore, the total hours involved per week are frequently inordinate.
2. *The agency must have the power to exercise eminent domain,* commonly known in the United States as condemnation, for the acquisition of individual parcels where negotiations are unsuccessful. In the case of EBRPD, that authority was obtained by an amendment to our enabling legislation in 1971, preparatory to the master plan program. The power must be used with a great deal of discretion and concern. It is used where the parcel is key and essential to the connecting of units previously acquired and where there is no rational alternative. We have used this power for trails in about four cases out of well in excess of 100 transactions, to give you some perspective. It is also significant that the State of California, Department of Parks and Recreation does not have this power; in my judgment, absent this power, the state will never be able to provide a state-wide trails system.

Citizen participation is essential in helping locate the best trail routes. EBRPD

Parts of East Bay's extensive regional trails system permit equestrian use. EBRPD

3. Another very important tool has been obtained by this District—a *study of trail neighbors and users* which was conducted over a four-month period in the spring of 1978 in the urban area of Lafayette. The purpose of the study was to accurately and professionally obtain data from 219 adjacent residences of the trail and 300 trail users. The questionnaires were extensive and detailed and it is interesting that there was an 85 percent response from adjacent property owners.

   This report is probably the first of its kind in the country, and clearly establishes that fears of adjacent property owners regarding litter, vandalism, loss of privacy, and depreciation of property values do not occur by the introduction of an inter-parks trail. The data obtained from the trail users concerning age, distance traveled to get to the trail, and purpose of trail use will be of immeasurable help as future trails are required.

4. *Citizen participation* is essential, and I classify this as a tool. We have formed an East Bay Area Trails Council, which brings together the diversified trail users. This group is a modifying force so that user groups, which might otherwise be in competition and thereby detract from the program, are encouraged to pull together. Their special knowledge and interest assist this District in the planning and development of the trails, and their field trips help the District in locating the routes. Very frequently their knowledge far surpasses that of District personnel involved in general planning and development. The individuals that make up the East Bay Area Trails Council report back to their respective groups; thus we incorporate many thousands of individuals.

5. Another critical tool is *funding*. The local agency must have an ongoing rapport with its legislators, since bills must be introduced from time to time to provide funding for specific proposed trails. Of course, the Land and Water Conservation Fund is an ongoing federal source that we have utilized on several occasions. Knowledgeable citizens testified at legislative committee hearings on the proposed legislation.

6. You must *coordinate with your police, rangers, or department of public safety*. The presence of such officers is very important at the early stages of trail development and use, if only for providing confidence and assurance to the adjacent property owners and users on the element of security and protection. Here, we found from our study that problems anticipated did not occur. In fact, the presence of many eyes is probably a safety factor.

7. *To reasonably assure the continuity of the interparks trail, one governmental agency should have jurisdiction over it.* The trail will frequently pass through unincorporated areas (counties) and cities and municipalities. The political element is removed from those cities or municipalities when the regional trail is under the control of the larger park agency. I find that the elected officials are very pleased with this procedure. When problems arise, they simply say, "Go see EBRPD." Thus we are able to meet a particular concern early and avoid the building up of any political matter. If this process were not followed and each jurisdiction had control of its own section, any one governmental entity could close the trail and sever the system.

Cyclists, hikers, and joggers share this trail within California's East Bay Regional Park District. EBRPD

Obstacles to Be Aware Of

Several admonitions derived from experience can be offered. First, there is a problem in planning or requiring that all elements and locations for the trail be determined in one fell swoop or prior to the program's going forward. Trail routes frequently must be determined pragmatically. When many alternative trail routes are publicly discussed and evaluated, we end up with a public shouting session of property owners, each saying the trail idea is great but "Why me? Put it over there."

The same thing applies to parklands, but is especially intensive for trails. You must move forward where there are dedications by owners at the time of subdivision, or lands otherwise are available—provided that the easement or fee is in the trail corridor.

Only the barest public agency awareness exists concerning the problems associated with urban trail routing. The failure of agencies to analyze, face, and accept responsibility for solutions to these problems is the most likely reason why trail programs have not been undertaken or, where undertaken, have been unsuccessful in so many instances. Further, failure always can be rationalized. For example, there are planners, engineers, right-of-way agents, lawyers, and environmentalists—to name just a few of the diversified offices and professions—that must be coordinated. If progress is not made accountability can no longer be identified.

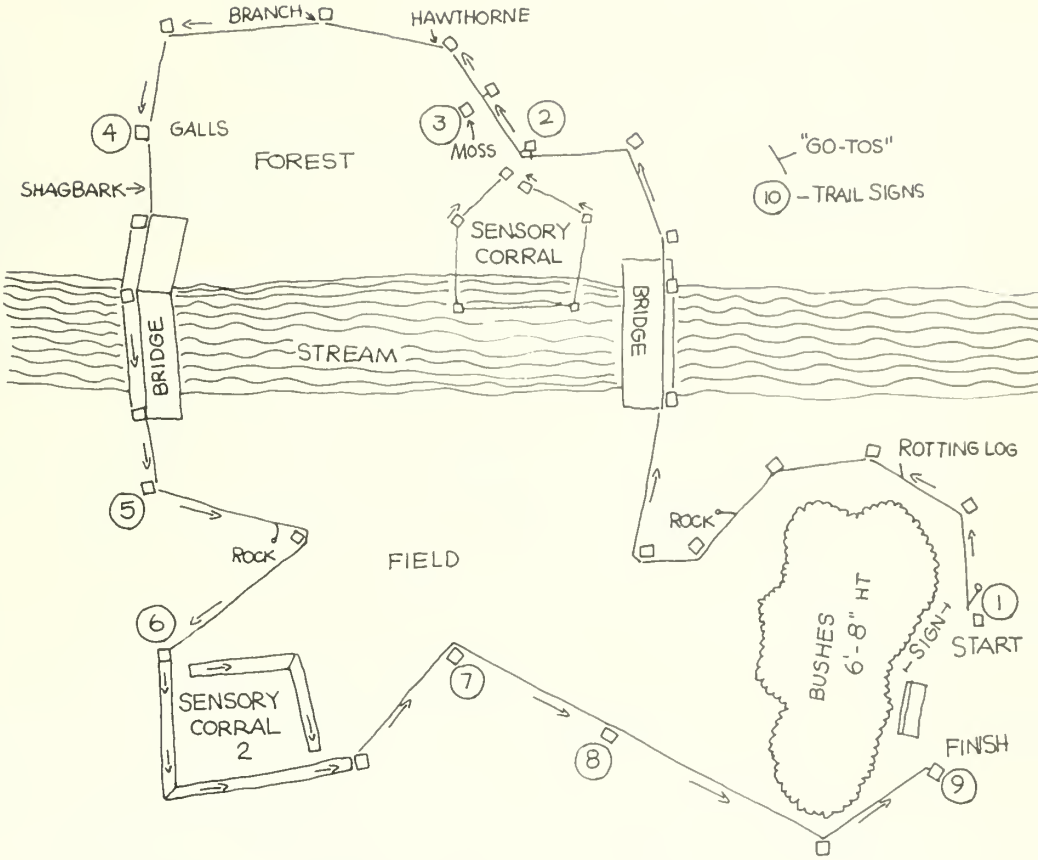
Staging is an important consideration in developing trails. The agency must anticipate and provide locations where trail users can congregate, park their cars, bring horse trailers, and, at certain points, have lavatory facilities. Here again, local opposition can arise. The area must be properly maintained during regular day-use hours. Generally, agencies should not plan that trail users will park their vehicles on the local street. The staging or gathering point should be centralized in either a park that has adequate parking space or at a staging area particularly designed for trail use.

As the nation's energy problems become more of a factor in everything we do, it seems only logical that we find ways to move from point to point on foot or by bicycle. Increasingly, public agencies will have to provide the means for the public to walk, bicycle, jog, and ride safely to and from the parklands of their area.

As Chief of California's East Bay Regional Park District's Land and Water Acquisition Department, Hulet C. Hornbeck has been "architect" of the East Bay Regional Park's Trail System, an extensive network which links urban areas with parklands and wilderness areas in Alameda and Contra Costa Counties. A founding Director of the National Trails Council, composed of trail-user organizations and trails systems throughout the nation, Mr. Hornbeck, now also serves as the organization's vice-president.

Owl Trail

by Robert B. Kauffman



Within the last several years, "rope trails" for the blind and blindfolded have become a popular interpretive device at many outdoor and environmental education centers. The format of most trails is rather simple. A rope, strung about three to four feet (.91-1.22 m) above the ground, serves as a guide where blind or blindfolded people can walk along the trail and experience the outdoor environment. Sometimes tape recorders, radio devices, or braille signs are included to provide an interpretive message.

These traditional types of rope trails generally are unchallenging for the blind and, therefore, are not used by them to the extent that they should be. For the sighted people who do use them, the trails provide little or no sensory stimulation.

Part of the problem is that the rope trails were not designed for the right audience. They were designed for the blind. Yet ninety-nine percent of rope trail users are sighted people.

Making a rope trail stimulating and challenging for the non-visually handicapped *may* also make it stimulating for the visually handicapped. This approach needs further investigation.

Meanwhile, the rope trail format has potential for sighted people. With innovative techniques, it can become an effective tool to facilitate interaction with the environment and stimulate sensory awareness. The Owl Trail at Stony Acres (PA) incorporates many of these techniques. The trail provides contrasting environments, such as field and forest, land and water, bridges, etc., to help stimulate non-visual sensory awareness.

Trail Design

There is merit to the concept of getting blindfolded people to utilize their non-visual senses by limiting the use of their vision. To be effective, external stimuli must be used to facilitate the use of the senses. With innovative improvements, the rope trail can be designed to facilitate the use of non-visual senses. The following factors were established as the design criteria for the Owl Trail:

1. It should be of normal interpretive length—one-quarter to one-half mile (.4-.8 km) in length
2. It should use the guide rope format and be designed for the blindfolded
3. It should consider the topographic features of the land, (i.e., no steep grades, etc.)
4. It should be self-guiding
5. It should have easy public access with parking readily available
6. It should have a visual barrier at the trailhead
7. It should provide a challenge to the user
8. It should provide a variety of experiences (e.g., forest, field, land, water, bridges, etc.)
9. It should use devices to stimulate interaction with the environment
10. And it should stimulate the use of non-visual senses

Rationale Behind the Design Criteria

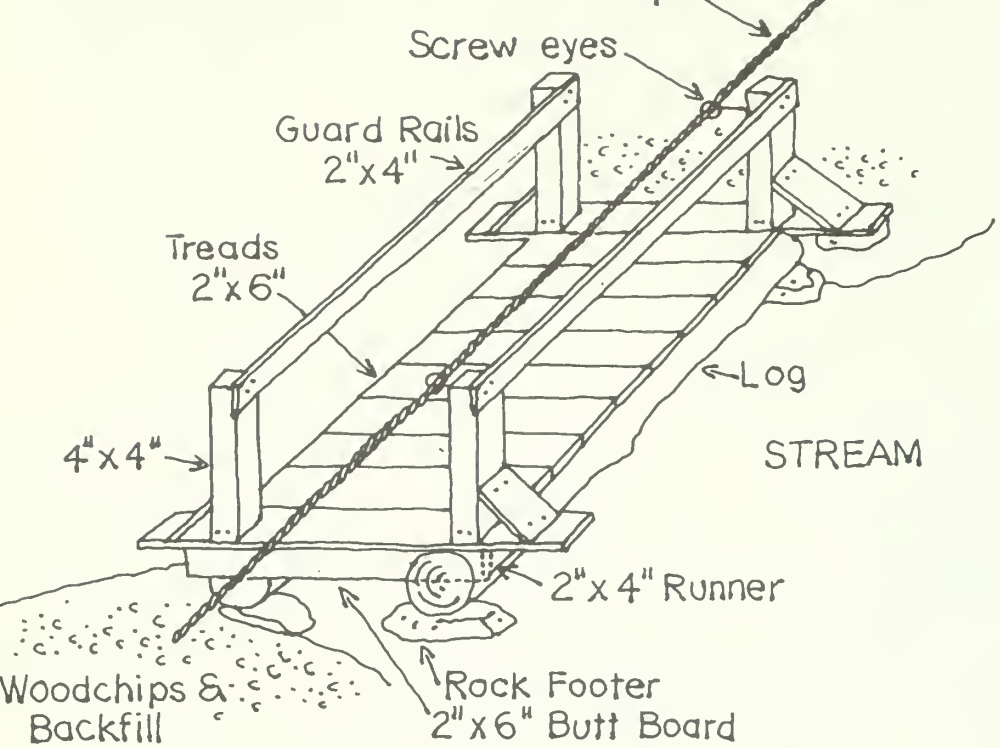
The trail at Stony Acres is slightly over 600 yards (540 m) in length, the normal length of an interpretive trail. For the rope trail this seems to be an adequate length since it provides a meaningful experience without trying to overdo it.

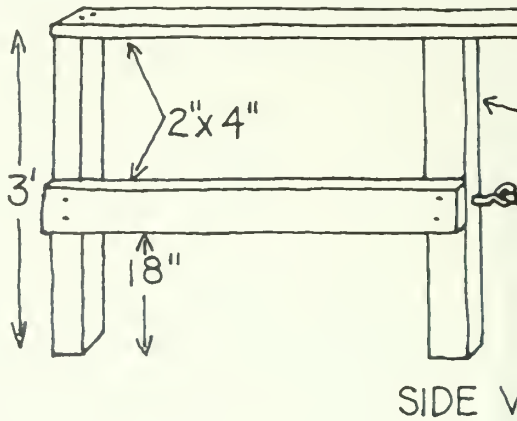
The guide rope type trail was chosen because it is a workable format, relatively inexpensive, easy to use by the non-visually handicapped, and it enjoys wide usage among professionals. However, it was the decision to make the trail challenging by the use of devices which stimulate interaction with the natural environment that separates this rope trail from others.

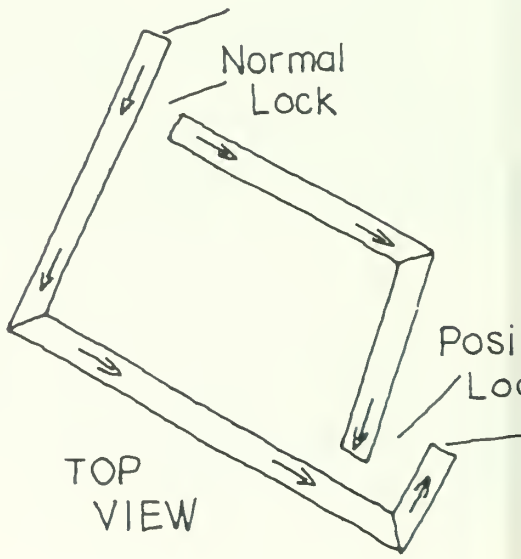
Beginning Trail Features

At the trailhead is a sign explaining the purpose of the trail as well as how to use it and what experiences may be expected on the trail. There is a bench for those waiting. The trail ends where it starts for a higher return of blindfolds as well as better orientation of the user.

The trail is designed so that the user cannot see the trail before entering it. The entrance and exit are hidden from the trail by a row of shrubs six to eight feet (1.8-2.4 m) high. This barrier eliminates any "mind-set" which the user may get by seeing the trail, and the user is not always in the position of trying to figure out where he is on the trail from the brief glimpses received at the beginning.







BRIDGE CONSTRUCTION

Before being blindfolded, the user is introduced to the first raised letter sign and the first "Go-to." The sign, located on the first post, reads: FEEL THIS. Interpretively, it invites the user to feel the sign while it provides him with the experience of reading the raised block letters with his fingers.

Next to the first sign is a "Go-to" rope leading to the ground. Not only does this introduce the user to "Go-tos" before being blindfolded, but it reinforces the idea that he should kneel, bend over, and crawl if necessary on the trail. Both the trail sign and the "Go-to" help acclimatize the user to the trail.

Safe Yet Challenging

The trail is neither dangerous nor hazardous. However, it is not "cake" either. Since the participant is blindfolded, the trail is designed to be exceptionally safe. Safety railings on the bridges, removal of poison ivy, removal of rocks from the trail, etc., are examples.

The trail is challenging in many ways. The user must utilize his non-visual senses; he must think, and he must be imaginative. For example, the trail sign SUN (sign #7) requires the user to utilize non-visual perception to sense the radiation from the sun. Ten yards (9 m) farther along the trail is the sign NORTH (sign #8) which requires the user to make the connection with the previous sign that the sun is always in the southern portion of the sky. Since the user is blindfolded it makes little difference which way he points, only that he makes the logical connection.

Bridges are only eighteen inches (.46 m) above the stream. However, for the blindfolded, eighteen inches (.46 m) could be eighteen feet (5.48 m). With the sudden realization that there is an edge, most people proceed with extreme caution. The user sharpens his senses in order to make it across the bridge. If his judgment is amiss, safety rails are provided to prevent any mishap. Remember that you don't need a stream to have a bridge along a trail.

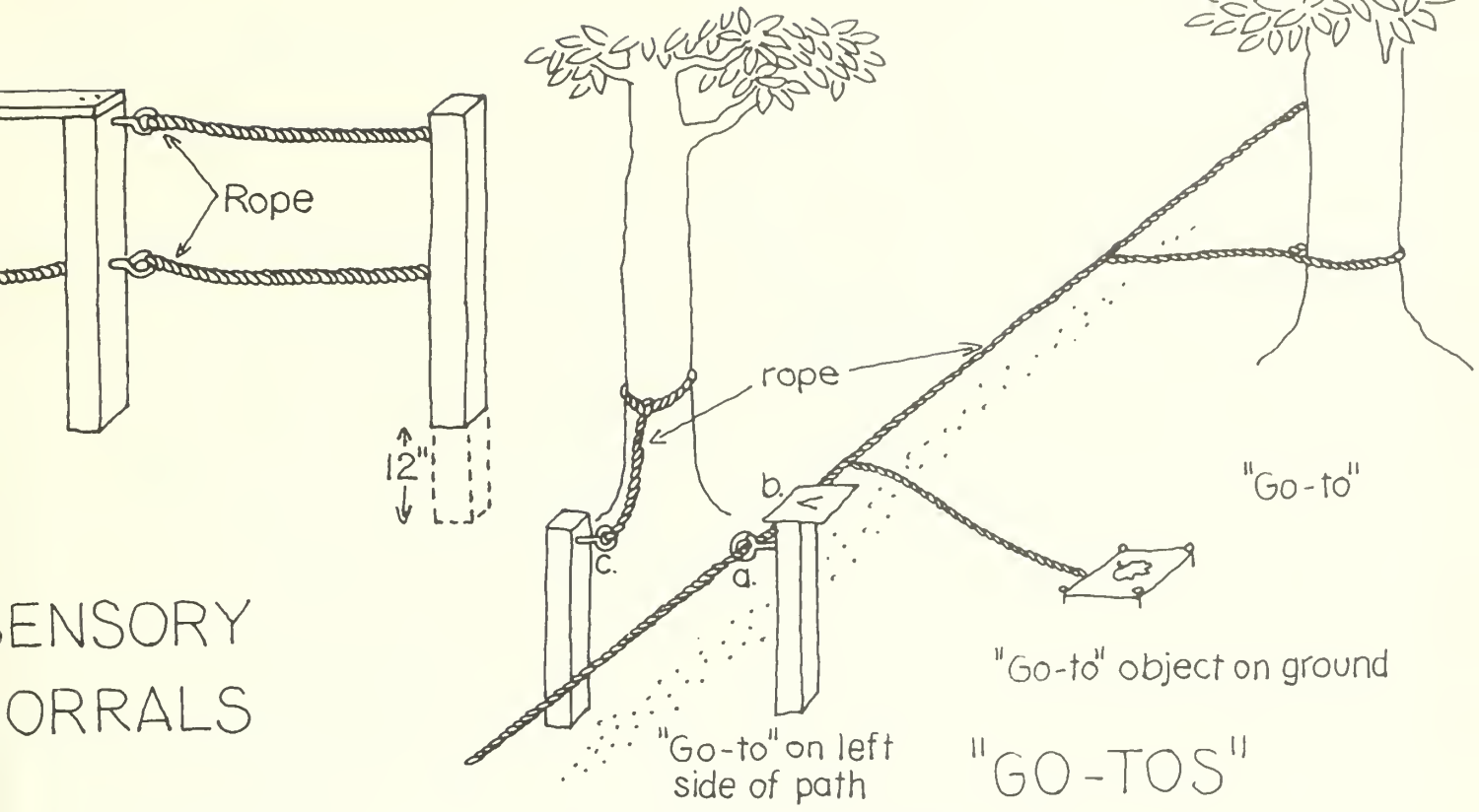
Signs

Trail signs are constructed out of one-half inch (1.25 cm) plywood, cut to sizes appropriate to the message on them. Lettering is two inches (5 cm) high and one inch (2.5 cm) wide and constructed from ¼" × ¼" (.625 × .625 cm) round molding. The letters are glued and tacked to the plywood with wire braids. Several types of letter construction were experimented with as well as letter sizes and distances between letters. We found that raised letters two inches (5 cm) high with three-quarters of an inch (1.9 cm) between letters proved most satisfactory. For ease of feel, the texture provided by a high gloss paint proved better than stain for finishing the face of the sign. There is room for additional experimentation in this area, however, since all possibilities and combinations were not tried.

Sensory Corrals

There are two sensory corrals on the trail. The first corral is for experienced trail users who roam freely within its four-wall confines. The environment is relatively undisturbed and contains such items as rocks, trees, moss, shrubs, and water. The difficulty of the corral is indicated to the user on the entrance sign. The design enables those who have not read the main sign, or who are not interested in the advanced skill, to easily circumvent the corral.

Compared to the first corral, the second is rather plain. The user can either experience the corral, located on the main trail, or circumvent it by following the railing. This corral contains one tree and a large grassy area where objects, such as stuffed animals, rocks, etc., can be placed. While the natural elements in this corral provide some stimulation, the plain format allows for staff experimentation.



ENSORY
ORRALS

"Go-To"

The last device to help the participant focus and interact with the environment is the "Go-to." Perhaps the simplest of devices, it is also the most effective. It is nothing more than a rope which connects the guide rope to an object located adjacent to the trail.

On traditional rope trails, an object not brushed against is an object not experienced. "Go-tos" connect the user with off-trail experiences. One end is tied to the guide rope, the other to the object. The beauty of the "Go-to" is that when the object shows signs of wear or abuse, the "Go-to" can be removed altogether or simply moved. Being out of feel and therefore out of mind, the object can recover from wear or abuse.

"Go-tos" can connect to objects on the ground or above the user. For objects on the ground four eye screws can be stuck in the ground, encircling the object or area to be sensed.

Another variation is a "Go-to" trail which is a cross between a "Go-to" and a sensory corral. The "Go-to" leads from the guide rope to a sign reading CRAWL located about twelve inches (.3 m) off the ground. The user then follows the same rope from the sign, crawling along the rope experiencing the ground environment, until the rope again rejoins the main trail. Depending on the length of the mini-trail, the rope can either lie on the ground or be fastened to it with screw eyes.

Branch Trails

Another advanced skill is the branch trail. With the use of trail signs, construction of a switch becomes relatively easy. The trail sign may read ROCKY ROAD—LEFT. The user reaches left, finds the first post and then proceeds along the Rocky Road. Since the user reaches across with his left hand, there is the potential that some will inadvertently switch guide hands and be on the wrong side of the trail. This problem may be rectified by placing a post with an arrow on it pointing to the first post on the trail. The user reads the sign, reaches across the main trail with his left hand, finds the post, feels the arrow on top. Keeping his left hand on the post, he turns finding the rope and first post on the new trail with his right hand. This method of right, left, then right can keep the user properly synchronized. Branch trails offer repeat users the opportunity to use advanced skills and receive a variety of new stimuli.

Costs

To build a trail exactly like ours would cost approximately four hundred and thirty dollars without labor. Actual costs will vary with location, materials on hand, differences in purchasing policies, labor hiring practices, price of materials, and differences in trail construction, length, and design. The bridges, which can be a major expense, were not for us, since the trees were cut on our property and all the lumber was salvaged from dismantled tent platforms. Our major expense was the four by four (1.2 × 1.2 m) posts which cost $2.31 each.

From the comments of those who have experienced the Owl Trail, we have more than succeeded in our objectives of increasing non-visual sensory perception and facilitating non-visual interaction with the outdoor environment. The techniques used on this trail were relatively inexpensive and may easily be incorporated into other trails by park and recreation agencies of all sizes.

Robert B. Kauffman currently is a Ph.D. student at the University of Maryland, Recreation Department—Resource Management. Formerly he was an Instructor of Recreation at East Stroudsburg State College (PA).

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Who Can You Turn To?

FEDERAL

Further details concerning the National Wild and Scenic Rivers System and National Trails System can be obtained from:

Robert Eastman
Park Planning & Environmental Quality
National Park Service
U.S. Department of the Interior
Washington, DC 20240

Bern Collins
Heritage Conservation and Recreation Service
U.S. Department of the Interior
Washington, DC 20240

Douglas Shenkyr
Forest Service
U.S. Department of Agriculture
Washington, DC 20250

STATE

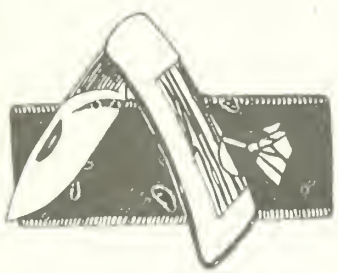
The best source of information on state river and trail programs is the Department of Natural Resources or the equivalent, usually located in your state capital.

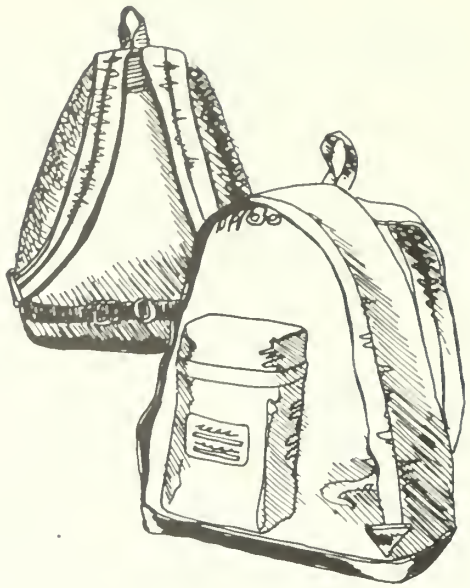
PRIVATE

The following private organizations represent the interests of river preservation and trails on a national scale. They serve as initiators of appropriate action and clearinghouses of up-to-date facts and information. They also can refer you to specific state and local contacts and put you in touch with private groups in your area.

American Rivers Conservation Council
317 Pennsylvania Avenue, SE
Washington, DC 20003

National Trails Council
P.O. Box 1042
St. Charles, IL 60174





VOLUNTEER ACTION

For additional information and guidance on using volunteer-based organizations to help maintain river and trail corridors contact:

Appalachian Trail Conference
P.O. Box 236
Harpers Ferry, WV 25425

EASEMENTS

For information on scenic and conservation easements contact:

The Nature Conservancy
1800 North Kent Street
Arlington, VA 22209

PUBLICATIONS

River Recreation Management and Research Symposium Proceedings. 1977. Details, sources, and case studies on river recreation planning, management, and research activities. Available through David Lime, North Central Forest Experiment Station, 1992 Folwell Avenue, St. Paul, MN 55109. Request: Full title (above), USDA For. Serv. Gen. Tech. Rep. NC-28, 455 p., illus. North Central For. Exp. Stn., St. Paul, MN.

Flowing Free: A Citizen's Guide for Protecting Wild and Scenic Rivers. Explains and analyzes National Wild and Scenic Rivers Act, summarizes state programs and lists state contacts, assesses local and private alternatives, and offers practical advice on how to save your river. Available from: River Conservation Fund, 317 Pennsylvania Avenue, SE, Washington, DC 20003. $3.25.

Conservation Easements. Booklet available from: The Maryland Environmental Trust, 8 Mulberry Street, Baltimore, MD 21202.

Additional information and pamphlets are available from:

American Canoe Association
National Office
4260 East Evans Avenue
Denver, CO 80222

American Forestry Association
1319 18th Street, NW
Washington, DC 20036

American Hiking Society
1255 Portland Place
Boulder, CO 80302

Bicycle Manufacturers Association of America, Inc.
1101 15th Street, NW
Washington, DC 20005

Boy Scouts of America
National Council
North Brunswick, NJ 08902

International Backpackers Association
P.O. Box 85
Lincoln Center, ME 04458

International Snowmobile Industry Association
1755 S. Jefferson Davis Highway
Arlington, VA 22202

League of American Wheelmen, Inc.
19 South Bothwell
Palatine, IL 60067

National Audubon Society
Nature Center Planning Division (Trail Planning)
950 Third Avenue
New York, NY 10022

National Campers and Hikers Association, Inc.
7172 Transit Road
Buffalo, NY 14221

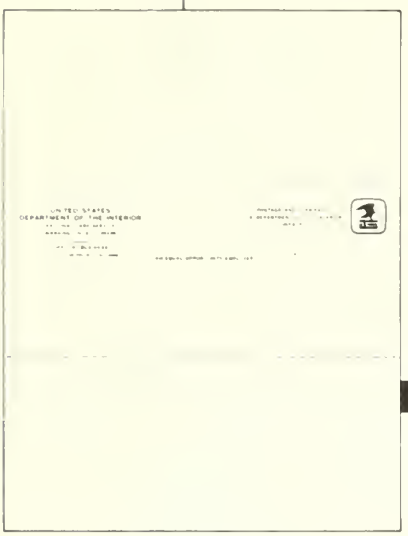
National Recreation and Park Association
1601 N. Kent Street
Arlington, VA 22209

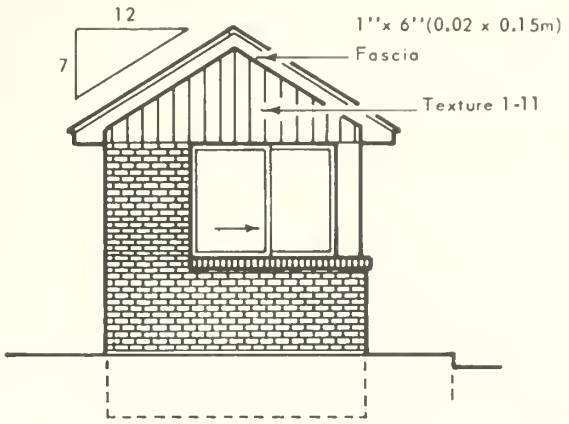
Sierra Club
220 Bush Street
San Francisco, CA 94104

White Water Sports, Inc.
1203 NE 65th Street
Seattle, WA 98115

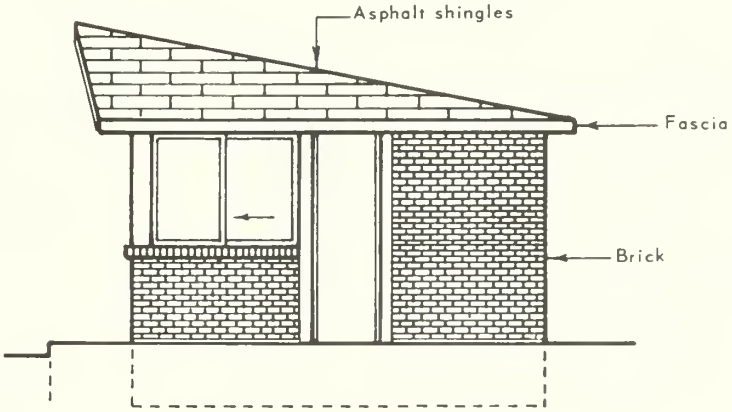
Awards

NEWS RELEASE u.s. department of the interior
national park service





NORTH ELEVATION



WEST ELEVATION

Three outstanding articles, submitted to the Park Practice Program's publications by National Park Service personnel, have been cited for their contribution to park and recreation management. An editorial/advisory committee reviewed all material which appeared in 1978 issues of TRENDS, GRIST, and DESIGN. Based on its recommendations, the following Awards of Excellence have been made.

William C. Everhart for his article, "Park Forecasting," which challenged a number of popular, long-held premises basic to park management. The article appeared in the Winter 1978 issue of TRENDS. A distinguished employee of the National Park Service for more than 25 years, Mr. Everhart retired last year from the position of Special Assistant to Director William J. Whalen. He now teaches at Clemson University in South Carolina.

Roger Giddings for his "Saving Cents on News Releases" submission to the September/October 1978 issue of GRIST. Mr. Giddings suggests sending out park news releases as self-mailers rather than using envelopes. Mr. Giddings is a management assistant at Grand Canyon National Park in Arizona.

Robert Campisi for his "Triangular Entrance Station" plan, which appeared in the Spring 1978 issue of DESIGN. This dramatically shaped, low-maintenance structure was designed for the George Washington Birthplace National Monument in Virginia. Mr. Campisi is a designer at the National Park Service's Denver Service Center.

*U.S. GOVERNMENT PRINTING OFFICE: 1979 290-512 6149 1-3